

TOSHIBA

T1200F & T1200FB
T1200H & T1200HB
Portable Personal Computer



User's Manual



FCC Notice

This equipment generates and uses radio frequency energy. If not installed and used properly, that is, in strict accordance with the manufacturer's instructions, it may cause interference to radio and television reception.

The equipment has been tested and found to comply with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation.

To determine if this equipment does cause interference to radio or television reception, turn it off and on. Try to correct the interference by one or more of the following measures:

- ☐ reorient the receiving antenna
- ☐ relocate the computing device with respect to the receiver
- ☐ move the computer away from the receiver
- ☐ plug the computer into a different outlet so that computer and receiver are on different branch circuits.

If necessary, consult the dealer or an experienced radio/television technician for additional suggestions.

You may find the following booklet prepared by the Federal Communication Commission helpful:

How to Identify and Resolve Radio-TV Interference Problems

U.S. Government Printing Office

Washington, D.C. 20402

Stock Number 004-000-00345-4

Warning: *This equipment has been certified to comply with the limits for a Class B computing device, pursuant to Subpart J of Part 15 FCC Rules. Only peripherals certified to comply with the Class B limits may be attached to this computer. Operation with noncertified peripherals or peripherals not operated by Toshiba is likely to result in interference to radio and TV reception. Shielded cables must be used between the external devices and the computer's serial port, RGB port and parallel port. Shielded cables with ferrite cores must be used between the external composite monitor, the external 5 1/4" disk drive and the expansion chassis.*

Preface

Congratulations on your purchase of a popular Toshiba T1200 Portable Personal Computer.

This Manual

This manual explains how the T1200 works.

Chapter 1, *Introduction*, discusses the differences between the two T1200 models, describes each computer's capabilities, explains how to use this manual and its quick reference card, provides an equipment checklist, and tells you what to do if anything was damaged in shipping.

Chapter 2, *The Grand Tour*, identifies and explains the purpose of each part of the computer.

Chapter 3, *Getting Started*, includes procedures to follow the first time you use the T1200, plus other basic operations.

Chapter 4, *Operating*, explains what you need to know about disks, the battery, the LCD and the modem, as well as information about features unique to the T1200. It also contains instructions for the general care of your computer.

Chapter 5, *Options*, provides information about the peripherals available for the T1200 that you can buy from your Toshiba dealer.

Chapter 6, *Diagnostics*, contains helpful information on how to test the T1200, and suggests courses of action if the system doesn't seem to work the way it should.

The manual concludes with an appendix, a detailed index, and a glossary.

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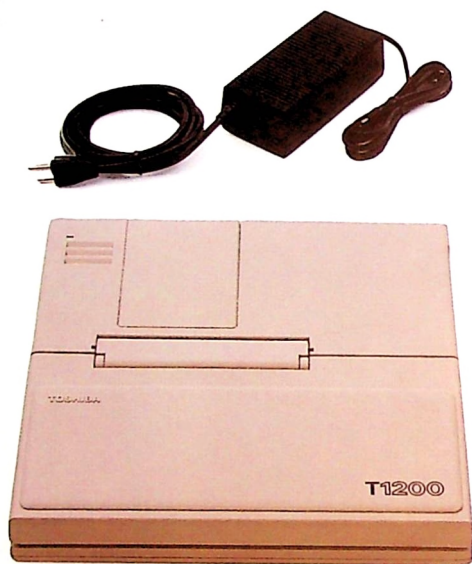
Glossary of Terms

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Chapter 1

Introduction

The Toshiba T1200 is one of the most advanced laptop personal computers available. Weighing approximately 11 pounds with a hard disk (approximately 10 pounds with dual diskettes), it is fully compatible with the IBM PC/XT.

T1200 Models

Toshiba designed the T1200 to meet a wide variety of applications. The model best suited to satisfy your needs depends on the applications you intend to run.

Two disk options are available:

- ☐ one 3 1/2" 720KB diskette drive and one 3 1/2" non-removable 20MB hard (fixed) disk
- ☐ two 3 1/2" 720KB diskette drives

Two display options are available:

- ☐ backlit liquid crystal display screen
- ☐ reflective liquid crystal display screen

Combined, these options provide a choice of four different models:

T1200HB	one 3 1/2" 720KB diskette drive one 3 1/2" 20MB hard disk backlit display
T1200H	one 3 1/2" 720KB diskette drive one 3 1/2" 20MB hard disk reflective display
T1200FB	two 3 1/2" 720KB diskette drives backlit display
T1200F	two 3 1/2" 720KB diskette drives reflective display

Each configuration has its distinct advantages.

- ☐ The hard disk models let you keep many data files on-line, ready for quick access.
- ☐ The dual diskette models provide economical laptop computing. They weigh about one pound less than the hard disk models.
- ☐ The backlit display models increase the range of lighting conditions under which you can use the T1200.
- ☐ The reflective display models don't use battery power as rapidly as do the backlit models.

Features and Benefits

The T1200 incorporates these features:

MS-DOS Operating System	The MS-DOS Version 3.30 operating system is IBM PC and PC/XT compatible, allowing you to run popular software.
Technology	Extensive use of large-scale integrated complementary metal-oxide semiconductor (LSI CMOS) technology provides minimum size and weight, low power usage, and high reliability. The computer is light and easily portable; it fits into many briefcases.
Microprocessor	An 80C86-1 microprocessor operates an IBM PC/XT compatible BIOS ROM at 9.54MHz or 4.77MHz (selectable from the keyboard).
Memory	<p>One megabyte of CMOS Random Access Memory (RAM) makes it unnecessary to buy more memory.</p> <p>RAM is usually volatile memory. This means that when you turn the computer off it loses any information stored in RAM. You can reserve part of conventional RAM (up to 640K) for use as a virtual disk, or VDISK. You can store data on a VDISK just like a physical disk, but, since it exists only in RAM, it is volatile.</p> <p>You can use part of the T1200's RAM as expanded memory to run large programs or as a special virtual disk drive called Hard RAM. Hard RAM is non-volatile so long as you're using the AC adapter, or the main battery is not completely discharged and the backup battery is not completely discharged.</p>
Batteries	A removable Nickel-Cadmium (NiCad) battery pack powers the computer for up to 7 hours. This high capacity battery is rechargeable.

A charge indicator light tells you when the battery is charging if you're using the AC adapter.

Two backup batteries, one for the T1200's special memory features and the other for the internal clock and calendar, help protect your data and keep the clock accurate.

AC Adapter

A universal AC adapter with power cord recharges the batteries and provides power to the system when the battery pack is low. This adapter works with any AC voltage between 110V and 240V (50/60Hz). This means you can use the AC adapter almost anywhere in the world (provided you have the correct plug adapter) without worrying about what voltage is available.

Keyboard

A sculptured, easy-to-use 82-key keyboard with full-size keys and standard spacing provides compatibility with software written for the IBM PC and PC/XT.

An integrated numeric keypad overlay allows easy numeric data entry.

An extended function key (**F_n**) lets you simulate enhanced IBM keyboard keys not physically present on the T1200 keyboard (such as **F11** and **F12**).

Disk Storage

The T1200's internal disk drives provide storage and portability for software and data.

The hard disk models contain a 3 1/2" 20 megabyte hard disk drive and an internal double-sided, double-density 3 1/2" diskette drive (720KB).

The dual diskette models contain two double-sided, double-density 3 1/2" diskette drives (720KB each).

You can create a special virtual disk in memory on any T1200. This disk, called Hard RAM, can store up to 384KB of data.

External Drive

An external disk drive port (labeled **EXT FDD** for floppy diskette drive) lets you connect an optional 5 1/4" drive, making it easy to transport data to and from computers that don't have 3 1/2" diskette drives.

LCD Screen

A high resolution, high contrast 80 column by 25 line (640 x 200 pixel) liquid crystal display (LCD), utilizing supertwist technology, provides one of the sharpest displays in the industry.

The LCD screen is fully adjustable over more than 90 degree viewing angle, making it easy to adjust the screen to suit your needs.

The reflective display option is suited to daytime and typical office lighting environments. The backlit display option can be used under very low lighting conditions.

External Monitors	Two external display connectors for both RGB color and composite monochrome monitors let you attach an external monitor to the computer. You can fold the LCD panel flat when using an external monitor.
Parallel Port	<p>A Centronics-type parallel printer port (DB-25 connector) compatible with IBM PC parallel printer cables enables you to connect your T1200 to IBM compatible printers.</p> <p>Toshiba's printers provide exceptional letter quality print and excellent graphics for use with the T1200.</p>
RS-232-C Port	An RS-232-C serial port (DB-9 connector) enables you to connect serial devices (such as a mouse or serial printer) to the computer.
Built-in Modem	If you purchased the T1200 built-in 1200 baud, Hayes-compatible modem, you can access consumer information services or dial into computer bulletin boards. Your dealer can add this modem to your T1200 if you decide you need it at a later time.
RESUME Feature	RESUME lets you shut the system off at any time, then return directly to your application when you turn the computer back on. This special T1200 feature speeds startup time and helps protect against accidental loss of data.
Documentation	The computer comes with this <i>User's Manual</i> , an <i>MS-DOS Manual</i> and two quick reference cards. Leave the manuals at home or in your office and travel with the quick reference cards. The cards contain all the basic information you need.

Options

The following hardware options are available from Toshiba:

5 1/4" Diskette Drive	An AC powered, 5 1/4" external diskette drive allows the computer to read from and write to 5 1/4" 360KB diskettes that are interchangeable with IBM PC, PC/XT, PC AT and compatible computers.
Numeric Keypad	A plug-in numeric keypad provides even more flexibility for your keyboarding needs.
PC Floppy Link	The PC Floppy Link lets you use one of the 5 1/4" disk drives in your IBM PC, PC/XT, or PC AT with the T1200.
Expansion Chassis	An expansion chassis (with an interface card) allows you to access up to 5 IBM compatible cards.
Battery Packs	Additional battery packs provide even more freedom and portability.
Battery Recharger	A separate battery recharger lets you recharge as many as three batteries. This option recharges batteries much more quickly than when you use the computer to recharge the battery packs.
Internal Modem	The internal 1200 baud, Bell/CCITT compatible modem is user-installable because it uses the expansion slot. It is separate from the built-in modem described above.
Memory Expansion Board	With the memory expansion board you can increase the T1200's memory to 2 megabytes. Use this extra memory for larger or additional virtual disks, print spoolers, or as more expanded memory.

Accessories and Supplies

You can purchase the following supplies from your computer dealer:

- ☐ interface cables
- ☐ 3 1/2" double sided, double density diskettes
- ☐ 5 1/4" double sided, double density diskettes

How to Use This Manual

If you've used a computer before, review the material in this manual as it includes information on features unique to the T1200. If this is your first experience with a computer, read each chapter carefully. A little time spent learning about the T1200 now will save you time later and enable you to use it to its fullest extent.

Fold-Out Flaps

Each chapter begins with a table of contents page that also has a fold-out flap. Turn to the tables of contents page and open the flap before you begin reading the chapter. Most of the illustrations referred to in the text are on the flap and are identified by capital letters.

Hardware Configurations

Certain instructions apply only to T1200 hard disk models; other instructions pertain only to T1200 dual diskette models.

HARD DISK T1200

The above heading identifies instructions applicable to hard disk (fixed disk) T1200 models only.

DUAL DISKETTE T1200

This heading identifies instructions applicable to dual diskette T1200 models only.

Quick Reference Cards

At the back of the manual is a quick reference card you can remove and carry with you. This card summarizes start up procedures and operating procedures. Use this card as a portable way to refresh your memory about the T1200's more frequently used features and commands.

In addition to this card, a separate booklet summarizes the syntax of all the MS-DOS commands.

Conventions

Italics identify variables for which you substitute values. For example, when the manual discusses entering the time when you start the computer, it refers to the hours and minutes as *hh:mm*. Replace the *hh* with the current hour and the *mm* with the current minute.

A distinctive typeface that resembles what you see on the computer distinguishes keytops and the embossed legends that identify the computer's lights and ports from surrounding text. For example, we refer to the parallel port as the **PRT** port since it is labeled **PRT**.

Each key is spelled exactly as you see it on the keyboard. We refer to combinations of keys by the key names separated by a plus (+) sign. For example, **Ctrl + Break** means you must hold down **Ctrl** and at the same time press **Break**.

We use **boldface** type to refer to parts of the computer the first time you read about them.

Symbols



This symbol identifies characters that you type.



This symbol identifies screen display text.

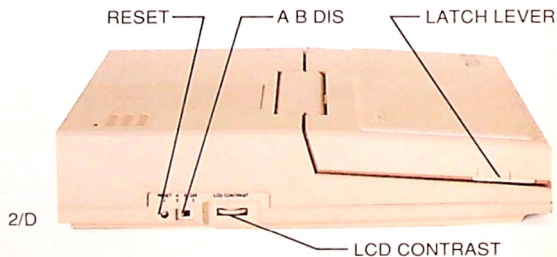
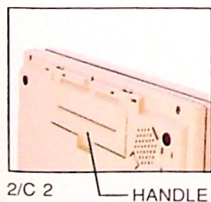
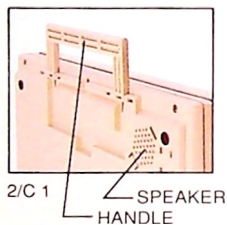
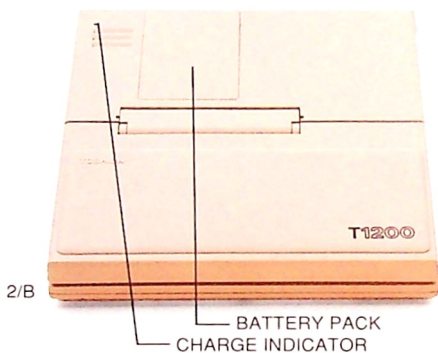
Terminology

We use these terms in this manual:

disk	This term may refer to the fixed disk or to a diskette.
built-in modem	Refers to the modem board in the computer and the phone connector on the computer's back next to the battery pack.
dual diskette T1200	This model of the T1200 has two diskette drives and no hard disk. It may have a backlit or a reflective LCD.
drive	Usually used to imply a disk drive containing a disk. The term is also used to refer to virtual disks (VDISK), as well as Hard RAM you've configured in SETUP1 and formatted with the FORMAT command.
hard disk T1200	This model of the T1200 has one diskette drive and one hard disk drive. It may have a backlit or a reflective LCD.
hard disk fixed disk	These terms are used interchangeably to refer to the same device.
internal modem	Refers to the modem card which occupies the T1200's expansion slot.



INDICATORS LIGHTS:
 NUM LOCK
 DISK IN USE
 UPPER
 LOWER
 CRT
 POWER/SPEED
 LOW BATTERY



Chapter 2

The Grand Tour

This chapter introduces the various parts of the T1200. The next two chapters provide more information on how each item works. Become familiar with each component before you operate the computer.

The Top

Figure 2/B shows the computer from the top.

The **battery pack** fits into the space on the top of the computer's chassis at the back. The **charge indicator** light comes on only when you connect the AC adapter to the computer and a working wall socket.

- ☐ When this light glows green, the battery is fully charged.
- ☐ When the light glows red, the battery is not fully charged. The AC adapter is recharging the battery pack.
- ☐ When the light blinks red there is a possible problem with the AC adapter.

In addition to the removable battery pack, the T1200 contains two internal batteries. One supplies power for the system's internal clock/calendar, and the other provides power for the computer's RESUME and Hard RAM features. The chapter entitled *Operating* contains information on these features.

The Left Side

Figure 2/D shows the computer from the left side.

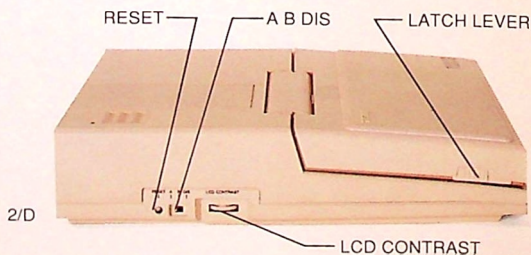
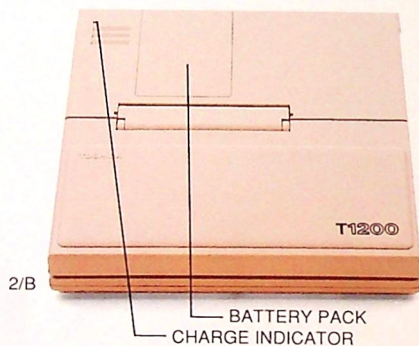
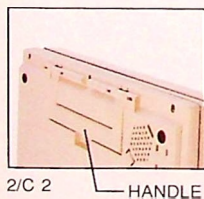
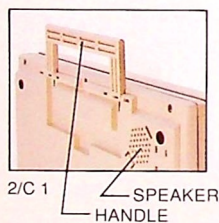
Notice the textured **latch lever**. There is one like it on the right side. Sliding these two levers forward together lets you lift the display panel and access the keyboard.

The **LCD CONTRAST** dial controls the contrast of the LCD (**L**iquid **C**rystal **D**isplay) screen.

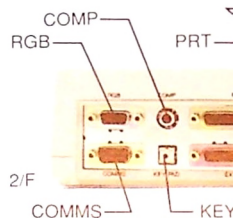
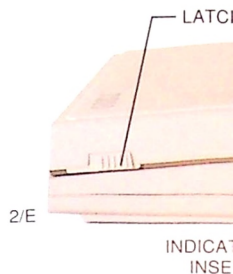
The toggle switch labeled **A B DIS** has three positions. Use it to select the configuration of the external floppy disk drive port (**EXT FDD**) located on the back of the computer.



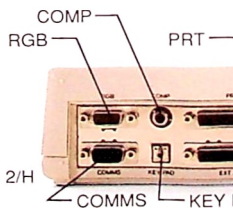
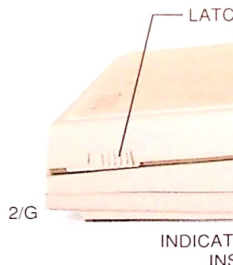
INDICATORS LIGHTS:
 NUM LOCK
 DISK IN USE
 UPPER
 LOWER
 CRT
 POWER/SPEED
 LOW BATTERY

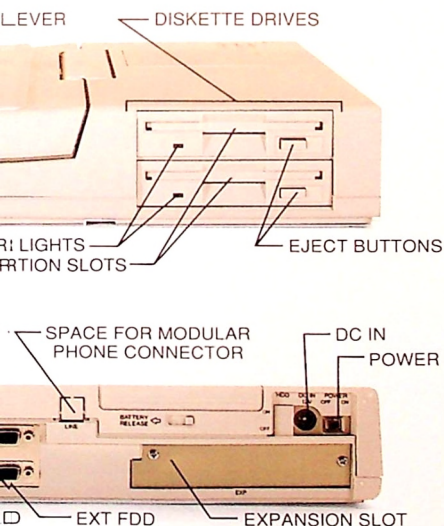
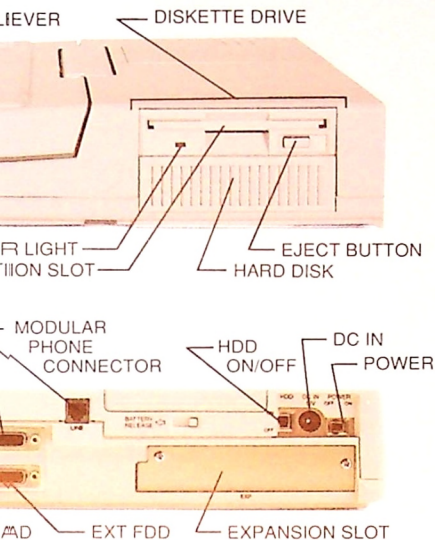


HARD DISK MODEL



DUAL DISKETTE MODEL





Chapter 2 Grand Tour

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To the left of the **A B DIS** switch is a small hole in the computer's housing. The **RESET** switch is located in this hole. It is a push switch.

You may never need to use the **RESET** switch. But if you enabled the T1200's **RESUME** feature and an error in your applications software locks the system such that you can't restart, you'll need to use this switch. For more information on the **RESET** switch and **RESUME** see the chapter entitled *Operating*.

The Right Side

Figures 2/E and 2/G show the right side of a T1200. The hard disk model is in Figure 2/E. Figure 2/G shows the dual diskette model.

Notice the textured latch lever corresponding to the one on the left side.

The disk drives are located at the rear. There is always a 3 1/2" **diskette drive** on the top. Depending on which model you have, another 3 1/2" diskette drive or the cover of the **hard disk** is below the diskette drive.

Each diskette drive has a disk **insertion slot**, an **indicator light**, and an **eject button**. Remove a disk from a drive by pressing the eject button. The disk pops partially out so you can easily remove it.

The indicator light on the 3 1/2" drive(s) glows when the computer is using the drive. There is a duplicate indicator light above and to the right of the keyboard.

CAUTION: *Never remove a disk or turn the computer off when a disk drive indicator light is on.*

The Back

Figures 2/F and 2/H show the computer's back panel. The computer shown in figure 2/F has the optional built-in, 1200 baud modem installed.

Below the removable battery pack is the **BATTERY RELEASE**. To remove the battery pack, slide the battery release to your left (as you face the back of the T1200), and lift the rear of the battery pack up and away from the computer. Replace the battery pack by reversing these actions.

To the left of the battery pack is a **modular phone connector** (space for the **modular phone connector** in Figure 2/H). Use this RJ11 socket to connect the optional built-in 1200 baud modem to the telephone network. (This modem is separate from the optional user-installable internal modem you can slide into the expansion slot.)

At the extreme left are two 9-pin connectors. The one on top, labeled **RGB**, lets you attach a color display, such as an IBM PC color monitor, to the computer. This type of display is often called a cathode ray tube (CRT).

Next to the RGB connector is the **COMP** monitor connector. Use the black cable that came with your T1200 to connect a standard composite monitor through this socket.

***NOTE:** The standard monochrome IBM monitor is not a composite monitor; therefore you cannot connect it to this computer.*

The 9-pin connector below the **RGB** connector is labeled **COMMS**. Use this RS-232-C port to connect serial devices, such as an external modem, a mouse, or a serial printer, to your computer. The pin configuration of this connector is compatible with the IBM PC AT.

To the right of the **COMMS** connector is a socket labeled **KEY PAD** into which you plug the optional numeric keypad.

Next to these connectors are two DB-25 sockets. The top one, labeled **PRT**, is a Centronics-compatible parallel port for connecting parallel devices such as printers. The bottom one, labeled **EXT FDD** is for the optional external 5 1/4" disk drive.

Near the top right of the back panel is the **POWER ON/OFF** switch. As you face the computer from the rear, slide this switch to the right, toward the outside edge of the computer, to turn the power on. Slide it to the left, toward the middle of the computer, to turn the power off.

To the left of the **POWER** switch is a socket labeled **DC IN 12V**. Use this receptacle for the output of the Universal AC Adapter.

To the left of the power receptacle is another switch, labeled **HDD**. This switch lets you shut off power to the hard disk drive on the T1200 models that have a hard disk. A cover over this switch prevents you from changing its position on the dual diskette T1200.

If you're not using the hard disk you can turn it off to save battery power. The up position, labeled **ON**, supplies power to the drive; to turn the power off put the switch in the down or **OFF** position.

Below the switches is the **expansion slot (EXP)**. It is protected by a metal cover you can remove to install the optional internal modem or expansion cards.

The Underside

Figures 2/C 1 and 2 show the **handle** in two positions. Use the handle to carry the computer when you don't want to use the carrying case. When you're not using the handle, it fits in a recessed space on the bottom of the computer.

Next to the handle is a perforated area. The **speaker** is behind this area.

The Universal AC Adapter

The Universal AC adapter converts AC power to DC and reduces the voltage for use by the computer.

The AC adapter senses what level of AC voltage it is receiving from the wall outlet (110 to 240 volts, 50/60 Hz) and configures itself appropriately. This means you can use the AC adapter almost anywhere in the world (provided you have the correct plug adapter) without worrying about what voltage is available.

You can connect the AC adapter while the computer is running without interrupting normal operations. You may also disconnect the AC adapter at any time without interrupting operations, provided the internal battery is sufficiently charged to power the system. (You can tell whether the battery is fully charged by looking at the charge indicator light. Refer to the section entitled *The Top* in this chapter for how it works.)

The AC adapter recharges the battery automatically when the computer's power is on or off and the adapter is attached both to the computer and to the wall outlet. The amount of time required to recharge the battery is approximately the same whether the computer is on or off.

WARNING: Use only the AC adapter designed for the T1200. You may severely damage the computer if you try to use any other adapter.

The LCD Display and Keyboard

If the top of the computer is not already open, open it now. Pull the two textured latch levers forward and lift the top.

Figure 2/A shows the T1200 with the display lifted and ready to work. References to left and right in the following discussions assume you are sitting in front of the computer.

The backlit LCD looks the same as the reflective LCD with the addition of a **BRIGHTNESS** dial below the screen. This dial controls how much background light the LCD provides.

The **LCD display** is the screen on which the computer displays information. It contains a thin pneumatic layer of liquid crystal pressed between two glass plates.

The LCD forms the images you see on a grid of 640 x 200 pixels. In normal text mode, this results in 80 columns of 25 lines of characters. A pixel is a dot on the screen. The computer turns pixels on or off to form the letters, symbols and graphics you see.

The LCD is a single color screen (called a black and white screen by convention). When a pixel is on it shows the same dark color. This means that the LCD displays colors as black, white, and shades of gray.

The **LCD panel hinge** lets you angle the position of the screen for the most comfortable viewing.

There are six indicator lights above and to the right of the keyboard:

- ☐ **Num Lock** glows when you've used **Num Lock** to select numbers on the numeric keypad overlay or on the optional external numeric keypad.
- ☐ The **Disk in Use** lights indicate when the internal disk drives are active. The **Upper** light (**A**) glows when you're using the top 3 1/2" drive. The **Lower** light (**B** or **C**, depending on whether you have a hard disk or dual diskette model) glows when you're using the lower drive.
- ☐ The external color monitor light (**CRT**) glows when you select the **RGB** or composite (**COMP**) ports. It means the computer is directing its display information to both of those ports instead of to the LCD.
- ☐ The power and speed light (**Power/Speed**) serves two purposes. When lit, the computer's power switch is on. The color of the light tells you the current clock rate of the microprocessor: green means 9.54 megahertz; red means 4.77 megahertz.
- ☐ **Low Battery** indicates when the battery needs charging. When this light flashes or glows, plug in the AC adapter or save your files and change the battery pack immediately.

WARNING: *When this light is on you have very little battery power left. Plug in the AC adapter. If the AC adapter is not available, immediately save your files and turn the computer off.*

The **keyboard** has 82 keys that can be divided into three groups: the white keys, the gray keys, and the soft keys. In general, the white keys are similar to keys on a typewriter. The gray keys and soft keys perform specific computer tasks. Soft keys are actually combinations of other keys.

All the keys on the keyboard are typematic, that is, the key repeats as long as you hold it down.

The White Keys

The white keys produce characters and symbols that appear on the screen.

There are some difference between typewriter keys and the keys on a computer:

- ☐ When you press the space bar, a computer does not pass over an area of the page as does the space bar on a typewriter. With MS-DOS (and most software) you do not see anything on the screen, but each time you press the space bar, the computer creates a space character as it does a letter or symbol.
- ☐ The lowercase L (**l**) and the number one (**1**) are not interchangeable on computers, as they are on a typewriter.
- ☐ The uppercase O (**O**) and the zero (**0**) are also not interchangeable on computers, as they are on a typewriter.
- ☐ **Caps Lock** locks only the alphabetic characters in uppercase, whereas on a typewriter the shift lock locks all keys in shifted position.

The Gray Keys

The gray keys perform many computer oriented tasks. Some gray keys perform both typewriter-like and computer tasks.

This section describes how each key functions when you use MS-DOS, and how some keys may act when you use such software as word processors and spreadsheets.

Some software packages alter how some keys work; refer to your software documentation for further information.

Note that the term "in MS-DOS" means you are at the operating system level (usually the DOS prompt).



In MS-DOS, **Esc** (escape) lets you edit the command you just typed. Many software packages use **Esc** to let you exit from what you are doing, or to return to the previous screen or function.



MS-DOS and software packages use the function keys, labeled **F1** through **F10** to make operations easier. The meaning of each function key varies for each software package you use; refer to your *MS-DOS Manual* for information on each key's purpose in MS-DOS.

The function key template helps you remember the purpose of each key. Use a felt pen or ball point pen to write prompts on the labels. Unless you use permanent ink, you can rub off and change the prompts when you need different reminders.

Remove the strip by pushing on either end with a fingernail or other small pointed object.



Use **Num Lock** to lock the numerals on the numeric keypad overlay (keys with blue numbers on the front). When the overlay is on, **Num Lock** is similar to **Caps Lock**: it shifts between numbers and cursor/page controls. See the discussion of the numeric keypad overlay later in this chapter.

Pause (printed on the front of **Num Lock**) works with **Ctrl**. Depending on how your software functions, this key may suspend the execution of a program (the same effect as **Ctrl + S**). Press any key to resume program execution. Refer to your software documentation and the *MS-DOS Manual* for more details.



Scroll Lock has no purpose in MS-DOS. Some software packages let you use it to lock the cursor on a specific line.

Break (printed on the front of **Scroll Lock**) works with **Ctrl** to interrupt program execution and return to the MS-DOS system prompt. **Ctrl + C** may have the same result with some software. Refer to your software documentation and the *MS-DOS Manual* for more details.



You can use the Print Screen key (**PrtSc**, the uppercase of the asterisk *****) to send text on the display to your printer. Note these **PrtSc** limitations:

- ☐ You must be using the T1200's internal CGA display adapter or a CGA adapter in the expansion chassis.
- ☐ The display must be in text mode. (If you first run the GRAPHICS command, **PrtSc** also lets you print graphics. GRAPHICS.COM is on your MS-DOS diskette.)



Your software documentation and the discussion of the CHAD command in the chapter entitled *Operating* explain how to use the System Request (**Sys Req**) key.



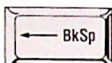
The tab key moves the cursor to the next tab stop. Tab stops in MS-DOS are preset every eighth character (i.e., 8, 16, 32, etc.). MS-DOS does not recognize the shifted position of this key, but your software may take advantage of the back-tab capabilities.



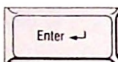
Use **Ctrl** (control) and **Alt** (alternate) in combination with other keys to send instructions to the computer.



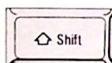
Caps Lock operates in a manner similar to the shift lock key on a typewriter, but it only affects the letter keys. You release **Caps Lock** by pressing **Caps Lock** again, not by pressing **Shift**.



BkSp (backspace) moves the cursor one character to the left and deletes the character that previously occupied that location.



Enter ends a line or screen of input.



The two **Shift** keys change the alphabetical characters from lowercase to uppercase (or selects the alternate symbols above the numerals). As on a typewriter, **Shift** functions only as long as you continue to hold it.



Home, **End**, and the four cursor control keys move the cursor in the appropriate direction based on your software cursor movement conventions. In MS-DOS, the left and right cursor control keys have the same effect as **F1** and **BkSp**, respectively; refer to the *MS-DOS Manual* for specific information on these keys.



PgUp (page up) and **PgDn** (page down) move the screen display one page up and down, respectively, if you are using software that supports those features. **PgUp** and **PgDn** have no effect in MS-DOS.



How **Ins** (insert) and **Del** (delete) work depends on your software. Your *MS-DOS Manual* describes how to use these keys for command line editing at the system prompt.

The Fn Key



Fn (function) works much like **Ctrl** and **Alt**, that is, in combination with other keys to send instructions to the computer. (The sections below, entitled *The Soft Keys* and *The Numeric Keypad Overlay*, describe other uses of **Fn**.)

You also use **Fn** to simulate certain keys not present on the T1200's keyboard.



Toshiba designed the T1200's keyboard to provide all the features of IBM enhanced keyboards. The illustration above shows one such keyboard. But since the T1200's keyboard contains fewer keys and fits in a smaller space, you must occasionally use two keys to simulate a single key on the larger keyboard.

- ☐ To simulate **F11**, press **Fn + F1**.
- ☐ To simulate **F12**, press **Fn + F2**.

IBM enhanced keyboards have two of each of these keys:

- ☐ **Enter** (on the main keyboard and near the numeric keypad)
- ☐ **Ctrl** (on the left and right sides of the main keyboard)
- ☐ **Alt** (on the left and right sides of the main keyboard)

Most of the time there is no functional difference between the two keys that share the same name. But this is not always the case. Occasionally, the **Enter** key near the

numeric keypad and the **Ctrl** and **Alt** keys on the right side of the keyboard act a little differently. On rare occasions, your software may require you to use these special **Enter**, **Ctrl**, and **Alt** keys. (Your software documentation should tell you if this is the case.) You can simulate these keys using **Fn**:

- ☐ To simulate the **Enter** key on the numeric keypad, press **Fn + Enter**.
- ☐ To simulate the right **Ctrl** key, press **Fn + Ctrl**.
- ☐ To simulate the right **Alt** key, press **Fn + Alt**.

The Soft Keys

Soft keys are key combinations that enable, disable, or configure certain T1200 features. Your setting of RESUME (see the chapter entitled *Operating*) does not affect soft keys. Soft keys are always reset to their factory settings whenever you turn on the system's power.

Selecting Processor Speed

The computer's 80C86 processor usually operates at a fast speed of 9.54 megahertz. Use a soft key to slow the processor down to 4.77 megahertz. Some software may operate better at this slower speed.

- ☐ To change the processor to slow speed, press: **Fn + PgDn**.
- ☐ To return to fast speed, press: **Fn + PgUp**.

If you select slow speed, the **Power/Speed** light glows red. It glows green when you select fast speed.

The computer always returns to 9.54 megahertz when you restart the system. Enabling RESUME does not save your setting of the soft keys.

Selecting the Display Device

Use a soft key to alternate display output between the LCD and the **RGB** (and **COMP**) ports.

- ☐ To select the external color monitor, press: **Fn + End**.
- ☐ To select the LCD, press: **Fn + Home**.

The **CRT** light glows when you select the external CRT.

The system automatically selects the LCD at startup.

Selecting the Display Character Font

Use a soft key to switch the character font on the LCD from normal to enhanced. This soft key works like a toggle switch; using it selects the font you are not currently using.

To select the alternate font, press: **Fn + right arrow**.

***NOTE:** This soft key has no effect if your software displays characters using graphics mode.*

Accessing the Pop-Up Window

You can use a soft key to check the battery status, and check or set certain of the T1200's configuration parameters.

To display the window, press: **Fn + Sys Req**. The window appears in the lower right corner of the screen.

The chapter entitled *Operating* contains a complete description of how to use the window.

*NOTE: You cannot use **Fn + Sys Req** if you're using the optional expansion chassis and an external display adapter.*

The Numeric Keypad Overlay

The keys that have blue numbers on their fronts comprise the numeric keypad overlay. This section describes the most important points you should know about these keys. The appendix entitled *The Numeric Keypad Overlay* describes all the features of the numeric keypad overlay in detail.

There are two ways to use the overlay. You can use it as a dedicated 10-key pad or you can access the blue numbers temporarily while still using the character keys.

10-Key Keypad

To use the overlay as a built-in, 10-key pad, press **Fn + Num Lock**. The **Num Lock** light glows to indicate that the computer automatically activates the numeric lock when you turn the overlay on.

- ☐ With the overlay on, you can temporarily type lowercase letters by holding **Fn** while you press a key.
- ☐ To temporarily type uppercase letters, hold both **Shift** and **Fn** while you press a key.

Press **Fn + Num Lock** again to turn the overlay off. The **Num Lock** light goes out to indicate that the computer automatically turns numeric lock off when you turn the overlay off.

Temporary Numbers

For temporary use:

- 1 Press **Num Lock**. The **Num Lock** light glows as soon as you press **Num Lock**, but you don't get numbers until the next step.
- 2 Hold down **Fn** while pressing the keys with blue numbers. When you release **Fn**, the keys work normally (letters).

Gray Plus and Minus

To simulate the gray plus and minus keys found on IBM keyboards, use the following soft key combinations:

Fn + P generates the gray minus.

Fn + ; generates the gray plus.

Generating ASCII Characters

Some applications let you imbed the ASCII equivalent for printable symbols that are otherwise not available through the keyboard.

Follow these steps:

- 1 Press **Fn + Alt**.
- 2 Type the ASCII decimal equivalent of the character (0 through 255) on the overlay.
- 3 Release **Fn + Alt**.

This feature is available in both numeric lock mode and normal mode on the numeric keypad.

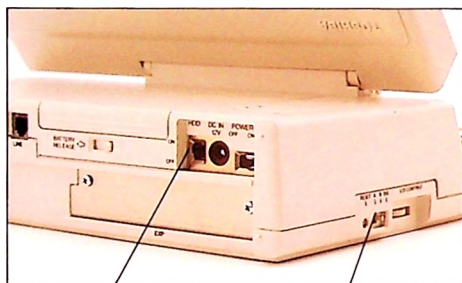
Chapter 3

Getting Started

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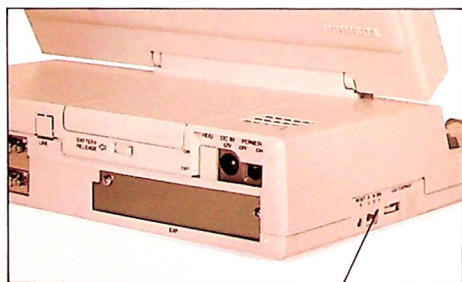
3/A



3/B

HDD ON/OFF

A B DIS



3/C

A B DIS

Chapter 3

Getting Started

This chapter begins with a description of how to start your Toshiba T1200 for the first time, including connecting a printer. It also discusses starting the computer each time you want to use it.

First Time Procedures

Make sure the battery is fully charged before you use the computer with the battery for the first time. To charge the battery, leave the computer plugged into the wall for six to eight hours.

These first time procedures assume you are using the AC adapter for power.

Attach the AC Adapter

- 1 See Figure 3/A.
- 2 Plug the round connector into the back of the computer.
- 3 Plug the other end of the AC adapter into a wall outlet.

Confirm the Configuration Settings

- 1 Wait several minutes to allow the battery pack to charge slightly before turning on the computer.

HARD DISK T1200

- 2 While you wait, make sure the configuration switches are set properly. Figure 3/B identifies the two switches to check. Use these settings during initial startup:

Set the **A B DIS** switch (on the computer's left side) to **DIS**. This tells the computer to identify the internal diskette drive as drive A.

Turn the **HDD ON/OFF** switch (on the back of the computer near the power switch) on. This turns on power to the hard disk drive.

DUAL DISKETTE T1200

- 2 While you wait, make sure the **A B DIS** switch is set properly. Figure 3/C identifies this switch on the computer's left side.

During initial startup, set the switch to **DIS**. This tells the computer to identify the top internal diskette drive as drive A and the bottom internal diskette drive as drive B.

Start the Computer

- 1 Turn the computer on; this message appears in the upper left corner of the screen to report the progress of the automatic memory check:



MEMORY TEST *nnn* KB

Instead of the memory test report, you may see this message:



*** SYSTEM CONFIGURATION ERROR ***

A checksum error occurred in the configuration RAM.

Select one of the following types.

[2-FDD type / 1-HDD & 1-FDD type]

Set by Right or Left Cursor & Enter key.

If this message appears, select **2-FDD type** for dual diskette models; select **1-HDD & 1-FDD type** for hard disk models.

- 2 While the memory test continues put the MS-DOS system diskette in the top 3 1/2" diskette drive making sure it snaps firmly into place. If you're not sure how to insert the diskette, refer to the section entitled *3 1/2" Diskettes* in the chapter entitled *Operating*.

- 3 When the memory check finishes, this loading message appears followed by requests for the date and time.



Toshiba Personal Computer

(c) Copyright Toshiba Corporation 1983, 1988

(c) Copyright Microsoft Corporation 1981, 1987

Current date is Sun 1-03-1989

Enter new date (mm-dd-yy):

Current time is 12:00:00.00

Enter new time:

If the date or time is incorrect, type the correct information. The proper format for the date is:

mm-dd-yy

where *mm* is the month, *dd* is the date, and *yy* is the year. If the date is correct, press **Enter** in response to the prompt.

The correct format for the time is:

hh:mm:ss

where *hh* is the hour, *mm* is the minute, and *ss* is the second. You must use 24-hour format for the hour (i.e., 7 p.m. is 19:00), and you don't need to type the seconds. If the time is correct, press **Enter** in response to the prompt.

If you make an error typing the date and time, type the date or time again.

If an error occurs during the memory test, turn the power off and back on to restart the test again. If the error persists, read the chapter entitled *Diagnostics*.

The computer displays the MS-DOS version followed by the system prompt as follows:



COMMAND Version 3.30

A>

When you open the computer, adjust the top so there are no distracting reflections on the LCD screen. Make further adjustments to the LCD display with the **LCD CONTRAST** dial on the computer's left side. Use this dial to control the contrast between the foreground (characters) and the background on the display.

The reflective LCD provides its best image in an area with moderate to bright ambient light.

The backlit LCD looks the same as the reflective LCD and provides the same display resolution (640 x 200, 80 columns x 25 lines). It contains an electroluminescent panel that illuminates the display from the rear. This means you can read its clear

display even in the dark. A **BRIGHTNESS** dial below the screen controls the amount of background light.

CAUTION: Do not disassemble the backlit LCD. It contains high voltage which could be dangerous. To exchange a reflective LCD for a backlit LCD contact your dealer.

Hard Disk Preparation

If you have a dual diskette T1200, skip to the section entitled *Dual Diskette Preparation*.

Partition the Hard Disk

You must partition and format the hard disk before you can use it. To see if your dealer has already prepared the hard disk for you, type **C:** and press **Enter**. If the **C>** prompt appears, skip this step and go to the section entitled *Copy MS-DOS Command Files*. If an error message appears continue with this step.

You'll use two MS-DOS commands to prepare the fixed disk: **FDISK** and **FORMAT**.

This section assumes that you plan to use the entire hard disk for MS-DOS alone. This is the usual case. If you wish to share the hard disk with more than one operating system, you must divide the disk into more than one partition. To do this, refer to the instructions in the *MS-DOS Manual*.

The system diskette should already be in drive A (the internal 3 1/2" diskette drive). If not, put it in drive A. Type **A:** and press **Enter**. The MS-DOS prompt **A>** displays.

1 Type:



FDISK

and press **Enter**. The **FDISK** program displays:



Fixed Disk Setup Program Version 3.3 / Drive #1
Copyright 1987

Total 611 cylinders (68 sectors per cylinder)
No partitions defined
Max. available space 611 (20.2 MB)

FDISK Options

Choose one of the following options : 1

- 1 : Create DOS Partition
- 2 : Change Active Partition
- 3 : Delete DOS Partition
- 4 : Display Partition Information

Press **ESC** to return to DOS/FDISK option

- 2 Choose the **Create DOS Partition** option; type **1** and press **Enter**. This text appears:



1. Create Primary DOS Partition
2. Create Extended DOS Partition

- 3 You must create a primary DOS partition first. Type **1** and press **Enter**.
You see these messages:



Create Primary DOS Partition

Do you wish to use the maximum size for a DOS
partition and make the DOS partition active (Y/N)?

- 4 Press:



Y

FDISK reserves the hard disk for MS-DOS and assigns the next available drive letter (C) to it. This operation takes a few seconds.

You see these messages:



System will now restart

Insert DOS diskette in drive A:

Press any key when ready

- 5 Press any key to restart MS-DOS.
The hard disk is ready for formatting.

Format the Hard Disk

During formatting MS-DOS creates a directory for the partition and places certain system information on the disk.

You should format the hard disk only when no data is stored on the disk or when you wish to erase all files.

WARNING: *FORMAT destroys all data on the hard disk.*

- 1 At the **A>** prompt type:



FORMAT C:/S

and press **Enter**.

The /S option copies two hidden system files and the COMMAND.COM file to the fixed disk so you can start the computer directly from the fixed disk.

This cautionary message appears:



**WARNING: ALL DATA ON NON-REMOVABLE DISK
DRIVE C: WILL BE LOST!
Proceed with Format (Y/N)?**

- 2 Since you are setting up the partition for the first time, there is no data to be destroyed. Type:



Y

and press **Enter**.

The **Disk in Use** indicator for drive C lights, and this status message appears:



**Formatting 611 cylinders
17 sectors per track, 4 side(s)
Head n Cylinder: nnn**

where the **ns** indicate the head number and cylinder number being formatted.

Don't be confused by the indication of four sides on the 20MB hard disk. Even though it has two physical sides and two read/write heads, the operating system treats it as four logical sides and read/write heads.

- 3 MS-DOS formats and initializes the partition. This may take several minutes, so do not be alarmed at the length of time required.
- 4 When formatting finishes, **FORMAT** places a copy of MS-DOS on the hard disk and displays:



```
Format Complete
XXXXXX total disk space
XXXXXX bytes used by system
XXXXXX bytes available on disk
```

followed by the disk space statistics and the MS-DOS prompt.

Copy MS-DOS Command Files

If your dealer has already prepared the hard disk, you may not have to perform this step. To check, log on to drive C. Type: **C:** and press **Enter**. Display a list of the files in the root directory by typing: **DIR** followed by **Enter**. If your dealer copied the MS-DOS files into the root directory, you should see the MS-DOS command filenames when you display the directory. (A list of MS-DOS external commands is in the introduction to the *MS-DOS Manual*.)

Your dealer may have prepared a special directory for the MS-DOS commands. Look for a directory (identified by **<DIR>** to the right of the name) called **MSDOS**, **MS-DOS**, or **DOS**.

If you are preparing the hard disk yourself, we recommend that you create a directory for the MS-DOS external commands and copy them from the MS-DOS system diskette in drive A to that directory. To do this, follow these steps:

- 1 Type:



```
MD MSDOS
```

and press **Enter** (MD stands for Make Directory).

- 2 Type:



```
CD MSDOS
```

and press **Enter** (CD stands for Change Directory).

- 3 Make sure the MS-DOS system diskette is in drive A. Type:



```
COPY A:*.*
```

and press **Enter**.

The **COPY** command copies the external command files from the diskette in drive A to the directory labeled **MSDOS** on the hard disk. As it copies each file, **COPY** displays the name of the file on the screen. When **COPY** finishes, the MS-DOS prompt reappears.

- 4 Put the diagnostics/supplemental diskette in drive A and repeat step 3.

Your hard disk is ready for use. With these files on the hard disk you'll be able to run any MS-DOS command without having to insert a diskette. The *MS-DOS Manual* contains more detailed information about this procedure and about directories.

Back Up the MS-DOS Diskettes

The purpose of this step is to back up the MS-DOS diskettes that come with your computer. Do this as a safeguard in case you have problems with the original diskettes in the future.

- 1 Make sure your MS-DOS diskettes are write protected. You write protect a 3 1/2" diskette by moving the tab in the upper right corner so a hole is clearly visible.
- 2 Put the MS-DOS system diskette in drive A.
- 3 Type:



DISKCOPY A: A:

and press **Enter**. MS-DOS loads the DISKCOPY command and displays:



**Insert target diskette in drive A:
and press any key when ready**

- 4 Put a blank diskette in drive A and press any key. DISKCOPY displays:



**Insert source diskette in drive A:
and press any key when ready**

- 5 Remove the blank diskette and put the MS-DOS diskette in drive A.
- 6 Continue following the DISKCOPY instructions making sure you don't confuse the target and source diskettes. DISKCOPY creates a duplicate image of the source disk on the target disk.
- 7 Repeat steps 2-5 for the diagnostics/supplemental disk.
- 8 When DISKCOPY finishes, immediately label the new disks appropriately. Store the original MS-DOS disks in a safe place and use the backup disks (the ones you just created with DISKCOPY) as your main system disks when you need them.

Starting and Restarting from the Hard Disk

The chapter entitled *Operating* describes the RESUME feature in detail. This discussion assumes that RESUME is disabled.

The next time you turn the computer on you won't need to run FDISK and FORMAT. To start from the hard disk, drive A (and drive B, if installed) must be empty. Remember that drive A may be either the internal 3 1/2" drive or the external 5 1/4" drive.

The computer goes through a startup sequence each time you turn it on. First it attempts to load the operating system from drive A. If there's no diskette in drive A, the computer attempts to load the operating system from drive B (if it exists). If there's no drive B or no diskette in drive B the computer loads the operating system from the hard disk.

- 1 Make sure there is no diskette in drive A. Drive A is the computer's 3 1/2" internal diskette drive unless the **A B DIS** switch is set to **A**. If this is the case, the external diskette drive is drive A.
- 2 Make sure there is no diskette in drive B (if it installed). If the **A B DIS** switch is set to **A**, the internal 3 1/2" diskette drive is drive B. If it's set to **B**, the external diskette drive is B.
- 3 Make sure the **HDD ON/OFF** switch is on. If the switch is turned off, the system will act as though the hard disk doesn't even exist.
- 4 Turn on the computer's power. If the power is already on, press:



Ctrl + Alt + Del

This key combination restarts the system without turning the power off, then on again. Your computer loads MS-DOS from the hard disk.

- 5 Confirm that the operating system loaded from the hard disk by checking the MS-DOS prompt. It should read:



C>

The first MS-DOS prompt you see always indicates the drive in which the computer found MS-DOS. See the *MS-DOS Manual* and the chapter entitled *Operating* for more information about disk drive identifiers.

Dual Diskette Preparation

If you have a hard disk T1200, skip to the section entitled *Connecting a Parallel Printer*.

Back Up the MS-DOS Diskettes

The purpose of this step is to back up the MS-DOS diskettes that come with your computer. Do this as a safeguard in case you have problems with the original diskettes in the future.

- 1 Make sure your MS-DOS diskettes are write protected. You write protect a 3 1/2" diskette by moving the tab in the upper right corner so a hole is clearly visible.
- 2 Put the MS-DOS system diskette in drive A.
- 3 Put a blank diskette in drive B (the bottom drive).
- 4 Type:



DISKCOPY A: B:

and press **Enter**. MS-DOS loads the DISKCOPY command.

- 5 DISKCOPY creates a duplicate image of the MS-DOS system disk on the diskette in drive B.
- 6 When DISKCOPY finishes, remove the disk from drive B and immediately label it appropriately. Store the original MS-DOS system disk in a safe place and use the backup disk (the one you just created with DISKCOPY) as your main system disk.
- 7 Repeat steps 2-6 for the diagnostics/supplemental diskette.

Formatting Diskettes

You must format each new diskette before using it. We recommend that you pre-format a supply of diskettes so they'll be available whenever you need them. The section under the heading *Formatting* in the chapter entitled *Operating* provides a complete discussion of how to format diskettes.

Normal System Startup

The chapter entitled *Operating* describes the RESUME feature in detail. This discussion assumes that RESUME is disabled.

The computer goes through a startup sequence each time you turn it on. First it attempts to load the operating system from drive A. If there's no diskette in drive A, the computer attempts to load the operating system from drive B. If there's no diskette in drive B it looks for a disk in the next available disk drive, and so on.

This means that each time you start the computer one of the disk drives attached to the system must contain a system disk. Remember these important points:

- ☐ If the system finds a non-system disk in a drive before it finds a system disk, you'll see an error message.
- ☐ The system disk can be in any drive as long as no earlier drive contains a non-system disk.
- ☐ If you need to restart the computer after it's already on, press:



Ctrl + Alt + Del

This key combination restarts the system without turning the power off, then on again. Your computer loads MS-DOS from the hard disk.

- ☐ Confirm that the operating system loaded from the desired disk drive by checking the MS-DOS prompt. It should indicate the drive in which the computer found MS-DOS. For example, if the system disk is in drive A, the system prompt should read:



A>

The first MS-DOS prompt you see always indicates the drive in which the computer found MS-DOS. See the *MS-DOS Manual* and the chapter entitled *Operating* for more information about disk drive identifiers.

Connecting a Parallel Printer

You can easily connect any standard Centronics compatible parallel printer to your computer. All you need is a standard IBM PC parallel printer cable. Your dealer can supply one or you can purchase one at any computer store.

- 1 The cable's connectors are designed such that it is impossible for you to connect them incorrectly. Insert one end of the cable into the **PRT** connector on the computer's back.
- 2 Insert the cable's other end into the printer.
- 3 Secure the printer end of the cable to the printer with the clips on the printer port receptacle. If you are making a permanent or semi-permanent connection, use the screws in the computer end of the cable to fasten it to the computer's chassis. If either end of the cable becomes loose, you can lose data and possibly interrupt your system's operation.

Connecting Serial Devices

Use the RS-232-C serial port (**COMMS**) to connect many serial devices to the computer. Refer to the chapter entitled *Options* for more information.

Turning the Computer Off

You should turn the computer off properly to avoid loss of data or damage to your equipment. Some software maintains files on the disk while it runs, and it is important that the program properly delete or update these files before you power off. Remember these important points:

- ☐ You lose work unless you save it to a diskette, or you have enabled the RESUME feature.
- ☐ If you haven't enabled the RESUME feature, the computer loses data in a VDISK unless you copy it to a physical disk or Hard RAM. But if you enabled RESUME, you don't lose the VDISK when you turn the computer off.
- ☐ Never turn the computer off while your program is accessing a disk drive. If a **Disk in Use** indicator is lit, don't turn off the power or remove the battery pack even if you enabled RESUME.

Slide the **POWER ON/OFF** switch to the **OFF** position. Don't forget to turn off any external devices you may have connected.

Do not turn the computer back on again immediately. If you want to turn it on, wait for fifteen seconds (or until the **Power/Speed** light above the keyboard goes out) before doing so. This allows the intelligent power supply to power down the system.

Moving the Computer

- 1 Remove all cables before transporting the computer.
- 2 Use the built-in handle to carry the computer without its case. Return the handle to the flush position to carry the computer in the case.

Chapter 4

Operating

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3 1/2 INCH
DISKETTE

METAL
PROTECTIVE
COVER

4/A PLASTIC
JACKET

SPACE FOR PRESS-ON DISK LABEL

WRITE
PROTECT
TAB



4/B



4/C



4/D



4/E 1 SWITCH



4/E 2 SWITCH

Chapter 4

Operating

This chapter provides detailed information about operating your Toshiba T1200.

MS-DOS and the *MS-DOS Manual*

MS-DOS is a set of programs that perform various housekeeping tasks, including control of the hardware (keyboard, LCD, disks, etc.).

When you first start the computer, it loads several MS-DOS files into memory. These files stay in memory and act as a traffic cop for the computer's operations.

MS-DOS is a very powerful operating system. It is also very flexible, allowing you to configure and control many aspects of your computer's operations.

Storage Devices

The T1200 provides a number of data storage options. This section discusses the types of data storage available to you.

Some options are physical disk drives. Others are virtual disk drives (meaning they aren't physical disks—they exist only in memory).

Disk Options

This list summarizes the disk storage options.

- | | |
|-----------------|---|
| 3 1/2" Drive(s) | The internal 3 1/2" diskette drive(s) stores data on 720KB diskettes. The hard disk T1200 has one 3 1/2" diskette drive. See Figure 4/B.

The dual diskette T1200 contains two such drives. See Figure 4/C. |
| Fixed Disk | The internal 3 1/2" fixed disk on the hard disk T1200 stores 20 megabytes (MB), or 20 million characters, of data on a rigid disk. |

- 5 1/4" Drive** You can add an external drive to the computer that uses 360KB 5 1/4" diskettes. Information about this drive is in the chapter entitled *Options*.
- VDISK** You can use the MS-DOS VDISK command in your CONFIG.SYS file to reserve part of the computer's conventional memory as a virtual disk.
- For more information on VDISK, see the section in this chapter entitled *Virtual Disks* or your *MS-DOS Manual*.
- Hard RAM** You can configure as much as 384KB of non-volatile RAM (or more, if you have the memory expansion board installed) as another memory disk, called Hard RAM.
- Hard RAM is different from the RAM disk you can create using VDISK. VDISK uses part of the T1200's 640KB of conventional memory, whereas Hard RAM uses the T1200's memory between 640KB and 1MB.
- Expansion Drive** If you need more disk storage, you can use the expansion chassis to attach an additional disk drive(s). The chapter entitled *Options* gives more information on the expansion chassis.
- Note that if you have a hard disk T1200 and you plan to use the expansion chassis to add another hard disk drive, you must disable Hard RAM (using SETUP1). This is because the extra hard disk drive and Hard RAM both try to use the same drive identifier.

You can remove disks from the internal 3 1/2" and external 5 1/4" drives and store or transport them to other computers. The disks you use in these drives are called diskettes.

Logical Disk Types

There are two ways to use disks: as system disks or as non-system disks.

System Disks

You can format any disk as a system disk. The FORMAT command stores two special system files on the disk when you use the /S option. Although these files take up space, you cannot display them. MS-DOS uses them to start the computer.

If you have a hard disk T1200, you must have formatted the hard disk as a system disk in order to automatically start from it.

Non-System Disks

Non-system disks are formatted disks that do not contain the MS-DOS hidden system files and cannot be used to start the computer. They are usually diskettes and are used for data files or off-line data storage.

This error message displays when you try to start the system from a non-system disk:



Non-system disk or disk error
Replace and press any key when ready

Besides differentiating between system and non-system types, disks can be program disks or data disks.

Program disks contain the software command files required to run your chosen application(s). They are sometimes write protected so you cannot accidentally destroy the files stored on them. If you have a dual diskette T1200, your program disks should almost always be write protected.

HARD DISK T1200

Most software manuals instruct you to copy the program files to the hard disk and store the original program diskette(s) in a safe place.

DUAL DISKETTE T1200

Most software manuals instruct you to copy the program files to a diskette and store the original program diskette(s) in a safe place.

Data disks contain data files created by your software programs. Since you are likely to make changes to these files, most data disks are not write protected.

HARD DISK T1200

The fixed disk is a system disk that contains both program files and data files. You cannot write protect the fixed disk, but you can protect a diskette and use it for data retrieval only.

Some software creates temporary files on the program and/or data disk. If you run such software from a diskette do not write protect the diskette.

DUAL DISKETTE T1200

You can protect a data diskette and use it for information retrieval only.

Some software creates temporary files on the program and/or data disk. Make sure your software doesn't do this before you write protect the program diskette.

The MS-DOS Diskettes

The MS-DOS system diskette that comes with the computer contains all the program files you need to get the computer started. It is the diskette you insert in drive A the first time you run the computer.

The diagnostics/supplemental diskette contains a few MS-DOS files, plus files required for configuring and maintaining your computer.

The MS-DOS diskettes are usually write protected disks. This is because you don't want to delete or modify any command files on them by accident.

HARD DISK T1200

The chapter entitled *Getting Started* explains how to copy the MS-DOS command files from the system diskette and diagnostics/supplemental diskette to the hard disk and how to use the DISKCOPY command to make a backup copy of the MS-DOS diskettes. Do this as part of the initial startup procedures or as otherwise needed. Keep the original and backup copies in a safe place.

DUAL DISKETTE T1200

The chapter entitled *Getting Started* explains how to create system disks and how to use the DISKCOPY command to make a backup copy of the MS-DOS diskettes. Do this as part of the initial startup procedures or as otherwise needed. Keep the original MS-DOS system diskette in a safe place and use the backup copies as your main system disks.

When to Use Each Type of Storage

Each type of media serves its own purposes.

The internal 3 1/2" diskette drive(s) provides portability and flexibility. Through it you can load software and transfer files between computers. 3 1/2" diskettes can be system or non-system diskettes.

If you have a hard disk T1200, the internal 3 1/2" fixed disk combines high storage capacity with very rapid access to your data. Fixed disks are almost always formatted as system disks. You cannot write protect the hard disk.

The external 5 1/4" drive provides compatibility with other computers. 5 1/4" diskettes can be system or non-system diskettes.

You can use a VDISK or a Hard RAM disk in much the same way as a physical disk. These disks provide almost instantaneous access to your data. The information you store in Hard RAM stays there as long as the battery or the backup battery is charged, or the T1200 remains plugged into the wall outlet.

You can format Hard RAM, copy to and from it, and use it exactly as you would a physical disk. You cannot write protect Hard RAM. There may be situations where you want to format Hard RAM as a system disk; this is discussed below in the section entitled *Hard RAM*. See *Virtual Disks* below.

You cannot format a VDISK or write protect it. Data you store in VDISK stays there until you turn the system off, unless you've enabled the T1200's RESUME feature.

Formatting Disks

Disk drives function like a tape recorder, reading and writing magnetically encoded information. Each drive has read/write heads that it positions across the surface of the disk to record and retrieve information. Virtual disks and Hard RAM simulate the same process.

A disk is divided on each side into a series of concentric circles called tracks. Every track is divided into a number of sectors.

An item of information on a disk has a certain address composed of its side, track, and sector numbers. In this way the computer's operating system knows where to locate specific data.

The procedure by which the computer divides the disk into tracks and sectors is called formatting. You must format every new disk before you can use it.

WARNING: *Formatting destroys all data on the disk. Be very careful when using this command.*

The section in this chapter entitled *Hard RAM* (see *Virtual Disks* below) explains how to format Hard RAM. The section entitled *Formatting*, under the heading *3 1/2" Diskettes*, provides procedures for formatting 3 1/2" disks. The chapter entitled *Getting Started* gives specific instructions for formatting the fixed disk on a hard disk T1200.

Identifying Drives

MS-DOS and software programs identify disk drives by the letters A, B, C, etc. This is called the drive's name or identifier. The computer's internal (top) diskette drive is usually drive A. The first fixed disk is always drive C. Hard RAM on a hard disk T1200 is usually drive D; on a dual diskette T1200 it is always drive C.

If you have an external 5 1/4" disk drive attached, MS-DOS identifies it as either drive A or B depending on how you set the **A B DIS** switch. It is usually drive B.

If you are using a VDISK, MS-DOS assigns it the next available identifier (for example, E on a hard disk T1200, or D on a dual diskette T1200).

The A B DIS Switch

The **A B DIS** switch, located on the computer's left side, controls the drive identifier of the external diskette drive. Depending on how it's set, the switch may also affect the T1200's internal diskette drive(s).

When you select **A** or **B**, you assign that drive identifier to the external diskette drive.

HARD DISK T1200

The internal diskette drive is assigned the alternate identifier.

The drive identifier of the hard disk and/or Hard RAM is not changed.

For example, if you set the **A B DIS** switch to **A**, the internal drive becomes drive B, and the hard disk is not affected.

DUAL DISKETTE T1200

The top internal diskette drive is assigned the alternate identifier.

The bottom internal diskette drive is disabled. You cannot access the bottom drive.

For example, if you set the **A B DIS** switch to **A**, the top internal drive becomes drive B and the bottom internal drive is disabled.

When you select **DIS**, the external drive is disabled, even if it's attached to the **FDD** port on the back of the computer, and the internal drives are set to their normal identifiers.

This table summarizes the effect of the **A B DIS** switch:

A B DIS Switch Table

HARD DISK T1200				DUAL DISKETTE T1200			
Switch Setting	Ext.	Drives Int.	Fixed	Switch Setting	Ext.	Drives Top Bottom	
A	A	B	C	A	A	B	-
B	B	A	C	B	B	A	-
DIS	-	A	C	DIS	-	A	B

Accessing Drives

After a successful startup, the screen displays the MS-DOS system prompt. The standard MS-DOS prompt indicates the current disk drive. Here are two examples:

HARD DISK T1200

When you start the system from the fixed disk, the MS-DOS prompt displayed is:



DUAL DISKETTE T1200

When you start the system from a diskette in drive A, the MS-DOS prompt is:



When you start the system from Hard RAM (after you've formatted Hard RAM as a system disk), the MS-DOS prompt is:



To access a drive, type the disk drive identifier followed by a colon (:) and press **Enter**. MS-DOS logs onto the disk and displays a new prompt with the new drive identifier. If the drive does not contain a disk, or if some other error occurs, MS-DOS displays an error message.

Using the Drive Identifier

Most commands can include drive identifiers. A drive identifier tells MS-DOS where to find or place a command or file. For example:

HARD DISK T1200

the MS-DOS prompt is:



C>

and you want to run a command located on a diskette in drive A, you type:



A:command

MS-DOS finds and runs the command if it is on the disk in drive A.

You can use drive identifiers in other ways. For example:

HARD DISK T1200

if you want to copy a file from drive C to drive A, you type:



COPY C:source.ext A:target.ext

MS-DOS copies the file with the name *source.ext* from the hard disk to the disk in drive A and names it *target.ext*. The file on the hard disk does not change.

Refer to the *MS-DOS Manual* for other command options when using COPY.

If you issue a command without specifying a drive, MS-DOS assumes that you mean to use the current drive.

DUAL DISKETTE T1200

the MS-DOS prompt is:



A>

and you want to run a command located on a diskette in drive B, you type:



B:command

MS-DOS finds and runs the command if it is on the disk in drive B.

DUAL DISKETTE T1200

if you want to copy a file from drive A to drive B, you type:



COPY A:source.ext B:target.ext

MS-DOS copies the file with the name *source.ext* from the disk in drive A to the disk in drive B and names it *target.ext*. The file on the disk in drive A does not change.

3 1/2" Diskettes

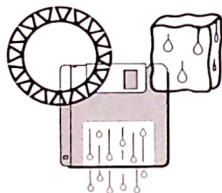
Figure 4/A shows the front and back of a 3 1/2" diskette enclosed in its sturdy plastic jacket. Notice these parts:

- ☐ plastic jacket
- ☐ metal protective cover over the head window
- ☐ write protect tab
- ☐ space for press-on disk label

During use the disk spins inside the jacket. The metal protective covering moves aside and the disk drive's read/write head makes contact with the magnetic surface through the head window.

Care

Diskettes are very important to your computer system. Handle them with care. If one becomes damaged you could lose valuable information. Take these precautions to increase the lifetime of your disks:



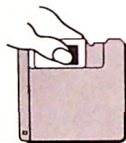
Keep diskettes away from direct sunlight or extreme heat and cold.

Store diskettes in the container they came in, or purchase a container specifically designed to hold 3 1/2" disks.

Do not attempt to clean the surface of a diskette. Cleaning fluid can prevent the disk drive from properly reading the information stored on the disk.

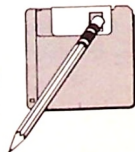


Do not attempt to take the diskette apart, or move the metal protective cover to expose the head window.

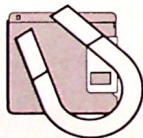


Protect the head window from fingerprints and the disk from dust and smoke.

Do not place heavy objects on diskettes.



Do not use an eraser on a diskette label or near a diskette. Eraser dust can easily get beneath the protective jacket.



Keep diskettes away from all magnetic sources, such as radio speakers, television sets, and motors.

Inserting and Removing

Figure 4/D shows the correct way to insert a 3 1/2" diskette into a drive. Follow these steps:

- 1 Hold the disk with the insert arrow side up (hub side down). Your fingers should be touching the label with the metal protective cover pointing away from you.
- 2 Place the disk into the disk insertion slot. When it is almost in, you feel a slight resistance. Give the disk a gentle push to secure it firmly in the drive.

If you insert the disk upside down or back to front, it doesn't completely enter the drive, and keeps popping out.

Don't attempt to force it in or out. If it doesn't go in easily, take it out and check that you are inserting it properly. If it doesn't come out easily, have a trained repair person remove it.

Remove a diskette by pressing the disk eject button. The disk pops halfway out for easy removal. Store it in a disk storage box.

Formatting

Follow these steps:

HARD DISK T1200

- 1 Make sure you're logged onto the disk and directory with the **FORMAT** program file. For example, if **FORMAT.EXE** is on the hard disk, the MS-DOS prompt is: **C>**
- 2 Type:



FORMAT A:

and press **Enter**.

DUAL DISKETTE T1200

- 1 Your MS-DOS system disk contains the **FORMAT** program. Put the system disk into the top drive and log onto the disk. The MS-DOS prompt is: **A>**
- 2 Type:



FORMAT B:

and press **Enter**.

The drive designator tells MS-DOS which drive contains the disk you want to format. If you simply type **FORMAT** and press **Enter** at the MS-DOS prompt, **FORMAT** requests that you specify a drive.

If you want to place the operating system on the disk to be formatted, include **/S** immediately following the drive designator.

- 3 **FORMAT** prompts you to place the disk to be formatted into the drive you specified. When you have done so, press any key to begin formatting.
- 4 **FORMAT** displays its progress on the LCD. When it finishes formatting the disk, this prompt appears:



Format another (Y/N)?

- 5 Press **Y** if you want to format another disk. Press **N** if you're finished formatting.

If you don't format a disk as a system disk (you omit the /S from the FORMAT command), you won't be able to start the computer from the disk. But the disk will have more room available for your program and/or data files.

You may want to format Hard RAM as a system disk. The advantages and disadvantages are discussed below in the section entitled *Hard RAM*. See *Virtual Disks* below.

You can find more detailed instructions for this command in the *MS-DOS Manual*.

Write Protecting

Microcomputers provide built-in safeguards to make sure you do not accidentally delete data. One of these safeguards is the mechanical ability to write protect diskettes. You cannot add, delete or modify files stored on a write-protected disk. You can change information on unprotected disks only.

Each 3 1/2" diskette has a plastic write protect tab on the corner of the diskette (see Figure 4/A). To write protect a 3 1/2" disk, slide the tab to uncover the small hole. When you expose this hole, the computer cannot alter the information on the disk. To remove write protection, slide the tab to cover the hole.

Labeling

Each box of diskettes comes with press-on labels for your labeling convenience. Figure 4/A identifies where to place the label.

Keep these points in mind when labeling disks:

- ☐ Label diskettes that contain programs or data immediately.
- ☐ Use only press-on labels designed for disks; most disk manufacturers include labels with the disks they sell.
- ☐ Don't confuse external press-on labels discussed in this section with the internal disk label you can put on the disk with the FORMAT and LABEL commands.

The Fixed (Hard) Disk

The 20 megabyte fixed disk provides high-speed, long term data storage.

The chapter entitled *Getting Started* explains how to partition and format the fixed disk in preparation for use. The *MS-DOS Manual* explains how to create directories and subdirectories on this disk so you can organize your work.

The **HDD** switch on the computer's back lets you turn the hard disk off any time you aren't using it. This saves battery power. Make sure you power it on again before you try to access it.

Understanding Memory

There are two types of physical memory:

- ☐ Read-Only Memory (ROM)
- ☐ Random Access Memory (RAM)

The T1200 contains ROM that provides permanent storage for program instructions, such as the basic input/output system (BIOS). The operating system and your software utilize information in ROM, but since it is non-volatile memory, they cannot alter it. Information stored in ROM is always available.

The T1200 comes with one megabyte (1MB) of internal RAM. You can expand it by installing the optional, 1MB memory expansion board providing a total of 2MB of RAM.

RAM is read/write memory: you can store data in RAM as well as read information from it. But RAM is volatile. This means that when you turn the computer off or experience a power failure, you lose all information stored in RAM (unless you enabled RESUME prior to the losing power).

Types of RAM

The T1200 has two logical types of RAM:

- ☐ Conventional memory
- ☐ Expanded memory

The distinction between these two types exists because of technological developments in the computer industry and because of the requirements of software applications. Hardware and software work together to provide the computerized tools you use in business and at home. As computers become cheaper to build, hardware manufacturers, like Toshiba, increase the computer's physical capacity to store and process information.

Some software programs can take advantage of the increased capacity. Others cannot. Toshiba provides memory configuration options to give you flexibility. You can configure the T1200 to meet the memory requirements and capabilities of your unique combination of software applications.

Conventional Memory

The first 640KB of RAM is conventional memory. We use the term "conventional" because 640KB is the standard memory capacity of personal computers that use MS-DOS, such as the IBM PC, PC-XT and compatible computers.

MS-DOS accesses conventional memory directly for use by both programs and data. MS-DOS cannot directly access memory beyond 640KB.

Expanded Memory

Some applications that run under MS-DOS can use memory beyond 640KB in spite of MS-DOS' limitations. These programs were designed according to a standard known as the Expanded Memory Specification (EMS), developed jointly by Lotus, Intel and Microsoft. We call this standard LIM-EMS, or expanded memory.

For example, Lotus 1-2-3 uses expanded memory to provide more space for large spreadsheets.

LIM-EMS uses a 64KB portion of memory between 640KB and 1MB as a window through which to access the additional memory. Software that supports expanded memory passes pages of data to and from this RAM as needed, using the 64KB window.

Memory Options

The T1200 supports expanded memory because your software may require it to increase its data processing capacity. You don't need expanded memory unless your application supports it. Refer to your software documentation to see if you need this feature.

You can configure all or part of this extra memory as expanded memory, and you can use conventional and expanded memory as a virtual disk or as cache memory. We discuss virtual disks in the next section.

Cache memory is a software technique that speeds up processing by storing frequently used data in an area of RAM. A caching program uses special algorithms to guess what data you are likely to need next. When your application requests more data, some of it may already be in RAM, thereby dramatically speeding the retrieval process.

Refer to your software documentation to see if your application supports this feature.

Using Expanded Memory to Run Programs

Because the T1200 computer contains 1MB of RAM, you can run programs that utilize more than the normal maximum 640KB of conventional memory. The T1200's expanded memory conforms to the Lotus-Intel-Microsoft Expanded Memory Specification (LIM-EMS), making it compatible with software written to use that specification.

You need not normally worry about how the EMS works. The preset value for SETUP1's **Built-in Expanded Memory Port Address** option is suitable for most software which is able to use expanded memory.

SETUP1 sets the amount of expanded memory available for software indirectly when you set the size of Hard RAM. The T1200 has 384KB of memory in addition to the 640KB of conventional RAM; any memory not used by Hard RAM is available as expanded memory. If you install the optional memory expansion board, you increase the T1200's expansion memory/Hard RAM space by 1 megabyte.

Your software documentation should tell you if your application can use expanded memory.

NOTE: If you plan to use expanded memory, you must include the *EMM.SYS* driver in your *CONFIG.SYS* file. Refer to the MS-DOS Manual for information on how to use a *CONFIG.SYS* file. You need not include the *EMM.SYS* driver in *CONFIG.SYS* if you plan to use Hard RAM only (no expanded memory).

Virtual Disks

A virtual disk, sometimes called a RAM disk, allows you to use the T1200's conventional and expanded memory as a disk drive (or drives). The primary advantage of virtual disk is its access speed. It has no mechanical element to slow it down. You can load programs or frequently used data files into a virtual disk and watch your application gain in responsiveness.

The T1200 supports two types of virtual disk, the MS-DOS VDISK and Hard RAM.

VDISK

There are two disadvantages to a VDISK disk.

- ☐ It is volatile in nature. If you switch off the computer, no data in the VDISK is saved, unless you've enabled the T1200's RESUME feature. If you use a VDISK to store data files, remember to periodically COPY the files from the VDISK to a physical disk. DISKCOPY does not work with a VDISK.
- ☐ VDISK requires the same conventional memory (640KB) available to run software, unless you select the /A option. The amount of memory each software package requires varies. If you plan to use VDISK, make sure to leave enough room for software. Your software documentation should tell you how much memory it requires.

Don't attempt to format a VDISK. The VDISK device driver preformats it during system startup.

The *MS-DOS Manual* explains how to install VDISK using the system configuration DEVICE command.

Hard RAM

A special feature of the Toshiba T1200 is its ability to save data in a RAM disk called Hard RAM even when you turn the system's power off. Like VDISK, Hard RAM exists in memory, so access to your data is almost instantaneous.

But Hard RAM differs in a number of significant respects from VDISK.

- ☐ You create Hard RAM and specify its size using SETUP1.
- ☐ You can only have one Hard RAM disk, whereas you can create several VDISKS.

- ☐ You must format Hard RAM, before you can use it, with the **FORMAT** command. Each time you change its size using **SETUP1**, you must format it again.
- ☐ Hard RAM is not a reserved part of the system's 640KB of conventional RAM. It uses part or all of the T1200's additional 384KB of expanded memory. This means there is no reduction of room in conventional RAM to run your software applications. If you have the optional memory expansion board installed, you have even more memory available for Hard RAM.
- ☐ Hard RAM is non-volatile so long as the backup battery is charged, or the removable battery pack is charged and installed, or the system is receiving power through the AC adapter.

Creating Hard RAM

Follow these steps to create and format Hard RAM.

- 1 On the Options Screen of the **SETUP1** command, move to the **Hard Ram Size** option (it's at the bottom of the screen).
- 2 Use the left and right arrows to specify the size of the Hard RAM disk. If you do not wish to use a Hard RAM disk, select **0KB**.
- 3 Press **Enter** then select **Yes** to save your changes.

NOTE: Do not select **Disable** for the **Built-in Expanded Memory Port Address** option if you want to use Hard RAM. Setting the **EMS** port address to **Disable** also disables the Hard RAM disk, regardless of your setting for **Hard Ram Size**.

- 4 Make sure you're logged onto the disk and directory containing the **FORMAT** command.

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- 5 Type:



FORMAT D:

and press **Enter**.

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- 5 Type:



FORMAT C:

and press **Enter**.

Your Hard RAM disk is now ready to use.

Even though Hard RAM is considered non-volatile, you should take precautions against losing data stored there. When you use Hard RAM, remember to periodically **COPY** or **BACKUP** the files from Hard RAM to a physical disk. **DISKCOPY** does not work with Hard RAM.

Hard RAM Errors

If a problem occurs with Hard RAM, you may see this error message when you boot the system:



**WARNING: DATA IN HARD RAM WAS LOST
YOU MUST FORMAT HARD RAM BEFORE USE
PRESS ANY KEY TO CONTINUE**

This message appears and you hear one beep if the system detects a checksum error in Hard RAM when you turn the power on. Possible causes of this error are:

- ☐ You changed the size of Hard RAM using SETUP1. If you changed the size of Hard RAM but had not previously formatted the Hard RAM drive, this message may not appear.
- ☐ The data in Hard RAM was lost due to discharge of the backup battery.

Special Considerations for Using Hard RAM

Hard RAM lets you simulate a hard disk. With the optional memory expansion board installed, Hard RAM can be as large as 1384KB (approximately 1.3MB). If your software occupies less space than this, you might be able to put it in Hard RAM and execute it from there. Whenever you start the system, your application is already in Hard RAM, ready to use. (Of course, you should always keep a copy of the software on a physical disk nearby in case you experience a system error and lose the data in Hard RAM.)

But the capability of storing software in Hard RAM also provides some other, less obvious, possibilities. You may recall that whenever you start the T1200, the system looks for a disk in drive A first, then drive B, then drive C, and so on. If any of these drives don't exist in your hardware configuration, the system simply skips that drive and goes on to the next one. If the system finds a disk without a copy of MS-DOS before it finds a disk with a copy of the operating system, an error message displays.

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Remember that if the **HDD ON/OFF** switch is set off, the system acts as if the hard disk isn't even there. But when you start the system, the computer looks for a drive—any drive—containing MS-DOS until it runs out of drives. Since, as far as the system is concerned, the hard disk doesn't exist, it identifies Hard RAM as a fixed disk and loads MS-DOS from Hard RAM.

A peculiarity of this procedure is that the T1200 identifies Hard RAM as drive C

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Remember that when you create a Hard RAM disk, the system automatically identifies it as drive C. This means that you can format Hard RAM as a system disk and start the computer from it. As far as the system is concerned, drive C acts like a hard disk.

Some situations may occur to you in which this feature of the T1200 would be particularly valuable. For example, you may be using memory-resident software to intercept printer output and

CONTINUED ON PAGE 16

(not drive D as when the hard disk is on).

Some situations may occur to you in which this feature of the T1200 would be particularly valuable. For example, if your applications require frequent system restarts, you'll benefit from the significantly reduced time required to load the operating system from Hard RAM instead of hard disk.

create special effects on your printer. Some such software requires that the system be rebooted every time you want to change the printing configuration. By formatting Hard RAM as a system disk you no longer need to put a system disk into one of the 3 1/2" diskette drives each time you reboot the system.

Managing Your Work

A computer's value to you is largely dependent on how efficiently you manage your data, and that means how you manage your disks.

There are three important aspects to disk management:

- ☐ organizing your work
- ☐ saving data as you work
- ☐ backing up your work

Organizing Your Files

You probably plan to use your computer for several types of jobs, such as to do your accounting, maintain inventory and customer files, provide word processing, and even support a hobby.

You may use several sets of data for one application (such as a spreadsheet). There's probably a natural division of your work into several categories.

The T1200 lets you easily organize these natural divisions into separate storage groups. MS-DOS provides the means to do this with its directory and subdirectory structure. The *MS-DOS Manual* describes directories and how they work.

Organizing your work into groups also defines the divisions you'll probably use for backing up your programs and data.

Saving Data on Disk

Data you enter may not be stored automatically on a disk. For example, most word processing software maintains a copy of the document you are working on in the computer's memory. When you finish editing, it is your responsibility to save the document to disk.

If you're using a Hard RAM disk to store data, it's very important to periodically save the data files to the hard disk or a diskette. A Hard RAM disk is non-volatile only as long as both the removable battery pack and the backup battery are charged, or you're using the AC adapter.

How and when you save data depends on the type of software you use and on how you've set up the T1200. Save your work frequently. You can lose data unexpectedly from an operating error. Make saving your data a reflex action as you work.

Backing Up Your Work

Backing up critical data is one of the most important administrative tasks associated with using a computer. It involves making a duplicate copy of important data and program files. It's like making photocopies of important papers to store in a separate file in case something happens to your primary filing system.

If you have ever used a computer on a regular basis, you know the importance of backups. If data is accidentally damaged, you still have the information on a backup disk. Consider the alternative.

The *MS-DOS Manual* explains how to use the COPY, DISKCOPY, BACKUP and RESTORE commands to back up files.

The RESUME Feature

One of the most important features of your T1200 computer is the ability to turn the power off without exiting from your software application, and return to where you left off as soon as you turn the power back on again.

This means that when you need to stop working you don't have to save files or remove any diskettes. All you have to do is turn the power off. The next time you turn the power on you will be at the same place you were when you turned the power off.

The RESUME feature is possible because the computer's CMOS memory chips require very little power to maintain data. The computer uses a backup battery to maintain the data in its memory.

Activating RESUME

Use the SETUP1 command or the pop-up window to activate the RESUME feature. The section in this chapter entitled *Configuring the T1200* explains the steps to follow.

The RESET Switch

There are some instances when you may have RESUME enabled, but you do not want to continue where you left off after power off/on. For example, you may be having a problem with your software and you want to restart the program from the beginning. You can press **Ctrl + Alt + Del**; however, this form of restarting, sometimes called a warm or soft boot, may not recover the system from the problem.

When RESUME is enabled and you wish to restart everything from scratch without RESUME, press the RESET switch, located on the computer's left side.

This type of restart is sometimes called a cold boot. Nothing is saved in memory when you restart the computer this way. The RESET switch overrides the RESUME feature.

Automatic Enabling of RESUME

As discussed in the section entitled *Batteries*, the system shuts itself off if the battery pack becomes completely discharged and the system isn't receiving power through the AC adapter. When this happens, the T1200 temporarily enables RESUME, even if you've disabled it using SETUP1 or the pop-up window. This means that your data stays intact as long as the backup battery has not become completely discharged.

Follow these steps to recover from an automatic shutdown:

- 1 Replace the battery pack or supply power to the system through the AC adapter.
- 2 Turn the computer's power switch off.
- 3 Wait several seconds.
- 4 Turn the power back on again.

If the backup battery did not completely discharge, the system continues from where it was when it shut off.

Restrictions

You must observe these restrictions when using the RESUME feature:

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- ☐ Do not turn off the power while the **Disk in Use** light for the internal diskette drive (A) is on.
- ☐ If you booted the system from the hard disk, the **HDD** switch must be on when you turn the main power switch back on.

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- ☐ Do not turn off the power while either of the **Disk in Use** indicator lights (A and B) are on.

- ☐ Make sure the computer is not exchanging data with a peripheral device through the RS-232-C port (**COMMS**) at the moment you turn the power off. This does not mean that you must physically disconnect the device, only that data cannot be going through the port.
- ☐ Do not change the setting of the **A B DIS** switch while the computer is powered down in RESUME mode.
- ☐ RESUME does not save soft key settings you've made. Every time you turn on the power, all soft keys return to their preset settings.
- ☐ You cannot use RESUME if you're using the optional expansion chassis. If you enable RESUME, you may be unable to restart the computer and expansion chassis when you turn the power on.
- ☐ RESUME may not operate correctly with some software which directly addresses the hardware, bypassing the BIOS.

Errors

If a problem occurs with RESUME, you may see this error message when you boot the system:



WARNING: RESUME FAILURE
PRESS ANY KEY TO CONTINUE

Possible causes of this error are:

- ☐ The backup battery is completely discharged, the main battery pack is discharged or not installed (you've removed it), and the system is not receiving power through the AC adapter.
- ☐ You turned the power off while the system was accessing an internal diskette drive.
- ☐ You recently changed the hardware configuration, such as, you added an expansion chassis or modem, or you changed the setting of the **A B DIS** switch.

Press any key to reboot the system.

Batteries

The T1200 has three types of batteries: the removable battery pack, the backup battery and the clock/calendar battery.

The Removable Battery Pack

Before using your new T1200 with the removable battery pack, make sure the battery is fully charged. Charge the battery by leaving the computer plugged into the wall for six to eight hours.

You can easily confirm that the battery is fully charged: with the AC adapter plugged into a working wall outlet and the computer, note the indicator light on the computer's top near the **POWER ON/OFF** switch. The indicator glows green when the battery is fully charged.

Figures 4/E 1 and 2 identify a **switch** on the underside of the battery pack. This switch does not change the power output of the battery. It exists to help you remember whether the battery pack is charged or not. This can be especially helpful if you have more than one battery pack.

In one position, the switch shows red; in the other position, the switch shows white. You can set the switch to white when the battery pack is fully charged. Change the switch to show red as a warning after the battery is discharged.

Monitoring Battery Pack Life

You can monitor approximately how much power is left in the battery pack. The pop-up window you access with the **Fn + Sys Req** soft key contains a gauge for this purpose.

As you use the computer on battery power, the gauge graphically shows the approximate amount of power you have left. Possible values range from full (F) to empty (E).

The display is always automatically reset to full when a discharged battery pack reaches a full charge while in the system.

If you discharge a battery to the extent that the system is forced to shut off, the battery gauge is automatically reset to empty.

When the prompt shows three question marks (???) between empty and full, you can update the indicator. The only time this happens is when you remove and replace the battery. Use the right and left arrow keys to set the amount of power you estimate the battery contains.

For this indicator to be useful, you should reset the gauge every time you change the battery pack.

Battery Pack Life

At least three major factors determine battery pack life:

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- ☐ how you configure your system (that is, whether the built-in or internal modem and the hard disk drive are enabled or disabled),
- ☐ how often and how long the internal 3 1/2" diskette drive runs,
- ☐ whether the batteries were fully charged to begin with.

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- ☐ how you configure your system (that is, whether the built-in or internal modem is enabled or disabled),
- ☐ how often and how long the internal 3 1/2" diskette drives run,
- ☐ whether the batteries were fully charged to begin with.

The **Low Battery** light flashes or glows when the battery pack gets low. The audible low battery alarm also sounds (unless you've disabled it using SETUP1 or the pop-up window). This is the system's warning that you have only a few minutes of battery power left. The actual amount of power left depends on your configuration; it ranges from nine minutes with no diskette, fixed disk, or modem in use, to only two minutes. Regardless of your configuration, don't count on much more battery time.

If you ignore the **Low Battery** light the computer automatically enables RESUME (if it's not already enabled), then turns itself off. After changing the battery or plugging in the AC adapter, turn the power switch off and back on again to continue processing. Because RESUME is always enabled when the system powers down in this manner, you can usually return to where you left off.

The following tables show maximum battery life with different configurations of the T1200. Typical disk drive use is approximately 10% for a diskette drive and 20% for a fixed disk. The times shown are from a fully charged battery to low battery indicator and from low battery indicator to automatic power off.

NOTE: Your battery life may vary from these times, depending on how you use your system.

Battery Life Table for a T1200 with a Reflective Display

<i>Configuration</i>	<i>Maximum Times</i>	
	<i>Operating</i>	<i>Auto Off</i>
Computer off		
memory only, main battery pack	10 days	
memory only, backup battery only	2 days	
Computer on, modem not installed		
no disk use	7.5 hrs	9 min
1 or 2 internal diskette drives in use	6 hrs	7 min
1 internal diskette drive and hard disk drive in use	2 hrs	2 min
Computer on, modem disabled		
no disk use	6.2 hrs	7 min
1 or 2 internal diskette drives in use	5.7 hrs	7 min
1 internal diskette drive and hard disk drive in use	1.9 hrs	2 min
Computer on, modem enabled		
1 or 2 internal diskette drives in use	4.4 hrs	5 min
1 internal diskette drive and hard disk drive in use	1.7 hrs	2 min

Battery Life Table for a T1200 with a Backlit Display

<i>Configuration</i>	<i>Maximum Times</i>	
	<i>Operating</i>	<i>Auto Off</i>
Computer off		
memory only, main battery pack	10 days	
memory only, backup battery only	2 days	
Computer on, modem not installed		
no disk use	2.8 hrs	5 min
1 or 2 internal diskette drives in use	2.6 hrs	5 min
1 internal diskette drive and hard disk drive in use	1.4 hrs	2 min
Computer on, modem disabled		
no disk use	2.6 hrs	5 min
1 or 2 internal diskette drives in use	2.6 hrs	5 min
1 internal diskette drive and hard disk drive in use	1.3 hrs	2 min
Computer on, modem enabled		
1 or 2 internal diskette drives in use	2.3 hrs	4 min
1 internal diskette drive and hard disk drive in use	1.2 hrs	2 min

Replacing the Removable Battery

Follow these steps:

- 1 If the computer is on, save your work and turn the system off.
- 2 Locate the **BATTERY RELEASE** on the computer's back below the battery pack (it looks like a slide switch). Slide it to the computer's right side (towards the disk drives) as you face the computer from the front.
- 3 Lift the rear of the battery pack with your free hand. Use the grid lines on the battery pack to assist your grip.
- 4 Let go of the **BATTERY RELEASE** and lift the battery pack out.
- 5 Replace the used battery pack with a freshly charged battery pack. Reverse the above steps to insert the new pack.
- 6 Press **Fn + Sys Req** to open the pop-up window.
- 7 Press the up arrow key.
- 8 Press and hold the right arrow key until the **Remaining Battery Capacity** gauge is "full."
- 9 Press **Fn + Sys Req** to close the pop-up window.

You can skip steps six through nine if you don't want to keep track of remaining battery power through the pop-up window.

Other Batteries

The T1200 contains two non-removable, built-in batteries in addition to the removable battery pack.

The Backup Battery

The backup battery provides power for the computer's RESUME and Hard RAM features. The backup battery can maintain all data in the computer for two days, even if the removable battery pack is completely discharged and the computer isn't plugged into the wall. If this battery becomes completely discharged, RESUME ceases to function and the computer loses any data stored in Hard RAM.

The removable battery and the AC adapter both automatically recharge the backup battery:

- ☐ Whenever the AC adapter supplies power to the system, it also recharges the backup battery. It can fully charge the backup battery from a completely discharged state in 10 hours.
- ☐ The removable battery pack can recharge the backup battery by itself (when the AC adapter is not attached) in three days. Of course, this assumes the removable battery pack itself contains a charge.

The Clock/Calendar Battery

The clock/calendar battery, a long-life lithium battery, provides power for the system's internal real time clock and calendar. It also maintains the settings you make with the CHAD command and the values you set through SETUP1.

If the clock/calendar battery becomes completely discharged, the internal clock and calendar stops functioning.

The LCD and Software

Even though the display adapter built into the computer is equivalent to the IBM color graphics adapter (CGA), colors are not visible on an LCD display. If you run software that uses colors to distinguish between types of information or between background and foreground, you may not be able to see the differences or read the information on the LCD.

For example, a word processing package might use white on black for normal characters, red on black for highlighted characters, and white on green for italic characters. The LCD may indicate these various color differences with high intensity and reverse video, or you may not be able to differentiate between the colors at all.

Screen attributes are the controls that determine which pixels are on or off, producing the images you see. Manipulating screen attributes lets you adjust the screen display to suit your needs.

There are two ways to adjust screen output: through your software applications and with the CHAD command.

Using Software to Control the LCD

If you have problems with the display on the LCD, refer to your software documentation. Your software probably has a program, called SETUP, INSTALL, or CONFIG, or a command you can run to reconfigure the software for the LCD.

This program may give you a choice of a few basic display types, or it may allow you to select which colors to use. If it offers you both choices, start by changing the display type.

Display Types

Software display setup programs usually offer at least these three display types:

- ☐ monochrome
- ☐ color
- ☐ black and white (B&W)

The best choice is usually black and white, if it is offered. If you must choose between monochrome and color, select color. Although monochrome and black and white may sound like they are the same, monochrome refers to an IBM monochrome screen. This type of screen is so different from the LCD that the software is unlikely to work at all if you choose this display type.

Do not select any non-IBM display types (such as Hercules).

You can solve most display problems by choosing the correct display type. If you still have trouble after selecting the appropriate display, try to set the colors individually.

Display Attributes

Most software lets you choose from three video attributes:

- ☐ steady or blinking
- ☐ black on white or white on black
- ☐ color on color or color on black

In addition, the T1200's LCD display lets you select normal or heavy characters (intensity).

You can combine these attributes to get eight different types of display.

Using CHAD to Configure the LCD

Use the CHAD command to configure the way the LCD displays color on color and color on black attribute combinations. You can install CHAD in memory and use it interactively to make temporary changes. Or you can use CHAD as a direct command to make permanent changes.

The CHAD Window



Change Display Mode

Select mode using cursor keys

Attribute	Mode
Color on Color	<div style="display: flex; justify-content: space-around; align-items: center;"> 1 <div style="border: 1px solid black; padding: 2px 5px;">2</div> 3 <div style="border: 1px solid black; padding: 2px 5px;">4</div> </div>
Color on Black	<div style="display: flex; justify-content: space-around; align-items: center;"> 1 <div style="border: 1px solid black; padding: 2px 5px;">2</div> 3 <div style="border: 1px solid black; padding: 2px 5px;">4</div> </div>

Press ESC to exit

When you use CHAD interactively, the window shown above appears. This section describes the window.

- ☐ **Color on Color** represents any combination of non-black foreground color with non-black background color, such as green on red or blue on magenta. The LCD shows all such combinations in the display mode defined by CHAD.
For example, if your software sends yellow characters on a blue background, the LCD uses the CHAD mode you specify for **Color on Color**.
- ☐ **Color on Black** represents any non-black foreground color on a black background.
For example, if your software sends blue characters on a black background, the LCD uses the CHAD mode you specify for **Color on Black**.

The window lets you choose from four mode possibilities:

- ☐ normal (normal white characters on black)
- ☐ reverse (normal black characters on white)
- ☐ intensified normal (heavy white characters on black)
- ☐ intensified reverse (heavy black characters on white)

Notice that one of the modes in each attribute selection has a triangle beneath it. The triangle points to the mode currently defined for that attribute combination. If the triangle on the top row (**Color on Color**) is pointing to 2, the LCD displays any color on color combination (such as yellow characters on a blue background) sent by your software as heavy white characters on a black background.

- ☐ Use the arrow keys in the lower right corner of the keyboard to change the mode. The blinking triangle is the cursor position. (If your software application has reset the LCD, the arrow may not blink.) Move left or right by pressing the appropriate arrow key. When the triangle moves, it changes the defined display mode.
- ☐ Move up or down to go from one attribute to the other. CHAD displays the attribute you are working on in bold type.

Using CHAD Interactively

This section describes how to access and use the CHAD window.

- 1 Make sure you're logged onto the disk and directory containing CHAD.
- 2 Type:



CHAD

and press **Enter**. After a moment, CHAD displays:



CHAD installed

and returns you to the system prompt.

- 3 Press:



Sys Req

The CHAD window appears:

- 4 Use the up and down arrow keys to switch between display modes. Use the right and left arrow keys to select the display attributes for each mode.
- 5 When you have defined the display modes for both attributes, press **Esc** to exit. The CHAD window disappears.

The changes you make using the window are temporary. They are lost when you turn the computer's power off (unless you've enabled RESUME) or restart. The window is a convenient way to try different CHAD settings with your software packages, or to change your regular settings temporarily.

You can change the location of the CHAD window on the LCD. Follow these steps:

- 1 With the CHAD window on the screen, press **Scroll Lock**.
- 2 Use the arrow keys to move the box anywhere on the screen.
- 3 Press **Scroll Lock** again to restore the normal functions of the arrow keys.

***NOTE:** You may press **Sys Req** and nothing happens. This means you're using a software application that controls the screen display in graphics mode instead of character mode. CHAD has no effect on graphics displays.*

Using CHAD Directly

When you start the computer, it reads the preset CHAD values stored in the battery powered configuration memory. The preset values (set at the factory) are probably suitable for your use. **Color on Color** is set to Reverse (mode 2) and **Color on Black** is set to Normal (mode 1). To store new preset values in configuration memory, use the direct form of the CHAD command, as described in this section. The format of the direct CHAD command is:



CHAD *c,b*[*W*]

where *c* is the number (1-4) of the display mode you wish to define for **Color on Color** and *b* is the display mode number (1-4) for **Color on Black**.

Use the optional **W** if you want the computer to use the new values each time you start or restart it.

For example:



CHAD 1,3,W

sets the display mode for **Color on Color** to Normal (mode 1), sets the mode for **Color on Black** to Intensified Normal (mode 3), and saves the new settings. Each time you start or restart the system, the computer uses these values.



CHAD 2,2

sets both **Color on Color** and **Color on Black** to mode 2 (Reverse) but does not save the values, so the definitions are temporary.

Configuring the T1200

Toshiba has made it easy for you to change many of the T1200's configuration settings. There are two ways to configure the T1200: through the SETUP1 command and a pop-up window you access by pressing **Fn + Sys Req**.

The following sections describe SETUP1 and the pop-up window. An introduction to each program is first, followed by practical configuration applications. Complete discussions of each option available through SETUP1 and the pop-up window are in an appendix at the end of this manual.

The SETUP1 Command

SETUP1 is an external command, which means that your T1200 must be able to find the program on a disk whenever you run it. The system will find the command if the SETUP1.EXE program is on the current drive and directory, or if the drive and directory where the program resides is included in the last PATH command you issued.

The SETUP1 Screen

To access the SETUP1 command, type:



SETUP1

and press **Enter**. This screen appears:



```

      [[ SYSTEM SETUP ]]
Internal Floppy Disk Drives:  1 Drive      2 Drives
Built-in Modem:              Disable      Enable
Power On Resume:             Disable      Enable
Primary Display Type:
Other Type   Color[40*25]  Monochrome  Color[80*25]
Built-in RS-232C Port Assign.: COM1        COM2
Printer Port Bi-directional:  Disable      Enable
Low Battery Speaker Alarm:    Disable      Enable
System Speaker:               Disable      Enable
Built-in Expanded Memory
Port Address:
208H   218H   258H   268H   2A8H   2B8H   2E8H   Disable
Hard Ram Size:
0KB    128KB   192KB   256KB   320KB   384KB
Keyboard Type:  84-keys   101-keys

Do you want to change the setup?  [ Yes / No ]
Set <Yes> or <No> by Right or Left Cursor & enter key.

```


The SETUP1 screen has two parts: the command lines and the options screen.

To select a value for a prompt on the command lines, use the arrow keys to move the flashing highlight to your answer and press **Enter**. You only answer one question at a time on the command line.

To set values on the options screen, use the arrow keys to make all your choices first. Press **Enter** only when you've made all your selections. When you press **Enter**, the flashing highlight moves back to the command lines. Again, use the arrow keys to move the highlight to your answer and press **Enter**.

Depending on the selections you've made, the system may reboot automatically when you exit SETUP1. Changing any of the following options forces the system to reboot:

- ☐ Internal Floppy Disk Drives
- ☐ Built-in Modem
- ☐ Primary Display Type
- ☐ Built-in RS-232C Port Assign.
- ☐ Built-in Expanded Memory Port Address
- ☐ Hard Ram Size
- ☐ Keyboard Type

Resetting Options to Preset Values

You can easily use SETUP1 to reset all options to their factory preset values.

- 1 Type:



SETUP1

and press **Enter**.

- 2 Highlight **Yes** and press **Enter** to confirm that you want to make changes.
If you decide to not reset the values at this time, highlight **No** and press **Enter**.
The screen clears and the MS-DOS system prompt displays.
- 3 Press the left arrow key then **Enter** to highlight **Default** (preset) values.
- 4 Press **Enter**. SETUP1 resets all the values on the options screen, and asks you to confirm the reset action.
- 5 To save the factory preset values, press **Enter**. The new values become effective immediately. Depending on what the values were before they were reset, the system may reboot; refer to the list above for the options which cause the system to reboot.

If you decide you don't want to save the reset values, highlight **No** and press **Enter**. SETUP1 begins over (go to step 2).

The Pop-Up Window

Some of the options you can change using SETUP1 are available through the pop-up window. You can also use the pop-up window to monitor approximately how much power is left in the main battery.

The pop-up window is built into the T1200. This means you can access the window without making sure a particular disk is in the drive.

The First Screen

To access the pop-up window, press **Fn + Sys Req**. This window appears in the lower right corner of the screen:

Remaining Battery Capacity:	E	???	F
Built-in Modem Power	➤	ON	OFF

Note the solid triangle pointing to **ON**. This triangle always points to the currently selected option.

The Second Screen

Press **PgDn** to move to the pop-up window's second screen.

Speaker	➤	ON	OFF	Mode:	RESUME	BOOT
Audible Battery Warning:		ON	OFF			

Use the up and down arrow keys to move between options on each screen (the solid triangle pointer moves).

Use the right and left arrow keys to select values for each option.

Press **PgUp** to move back to the pop-up window's first screen.

When you've made all your changes, press **Fn + Sys Req** to close the window and return to your application.

Configuration Options

This table provides a quick reference to a number of configuration possibilities on the T1200. The first column lists configuration tasks you may want to perform. The second column shows how to do the task using SETUP1; the third column shows how to do the task using the pop-up window. The last column discusses the procedure and offers hints about each task.

Configuration Table

<i>Task</i>	<i>SETUP1 option & value</i>	<i>Pop-Up Window option & value</i>	<i>Discussion</i>
Prepare the built-in internal modem for use.	Built-in Modem	N/A	This option enables the computer's internal communications electronics. You must also turn the built-in modem on with the pop-up window (see below).
Turn on the built-in modem.	N/A	Built-in Modem Power ON	This option complements the above step. Both steps are necessary to use the built-in modem.
Turn off the built-in modem.	Built-in Modem Disable	Built-in Modem Power OFF	Use this configuration to extend your battery pack power when you're not using the built-in modem. For maximum power savings, make both selections.
Enable RESUME mode.	Power on Resume RESUME	Mode Enable	These options duplicate each other. For example, selecting Mode=RESUME in the pop-up window also sets Power on Resume=Enable in SETUP1. You'll probably want to always run in RESUME mode since it enhances the computer's capabilities.
Disable RESUME mode.	Power on Resume Disable	Mode BOOT	These options duplicate each other. For example, selecting Mode=BOOT in the pop-up window also sets Power on Resume=Disable in SETUP1.

<i>Task</i>	<i>SETUP1 option & value</i>	<i>Pop-Up Window option & value</i>	<i>Discussion</i>
Use a monochrome monitor as your primary display.	Primary Display Type Monochrome	N/A	You must attach the optional expansion chassis, and install in it a monochrome display adapter (MDA). When you reboot the system, display output is automatically sent to the MDA.
Use an EGA monitor as your primary display.	Primary Display Type Other	N/A	You must attach the optional expansion chassis, and install in it an enhanced graphics adapter (EGA). When you reboot the system, display output is automatically sent to the EGA.
Set the COMMS port assignment.	Built-in RS-232C Port Assign. COMx	N/A	Instructs MS-DOS to which serial communications line (COM1 or COM2) you want the COMMS port connected. This option has no effect unless you have a built-in or internal modem (or other internal communications device) installed, in which case the internal device is set to the opposite communications line.
Disable audible low battery alarm.	Low Battery Speaker Alarm Disable	Audible Battery Warning OFF	Shuts off the audible low battery alarm. The Low Battery light still flashes. This choice may be helpful if you're in an environment where a beep would be disruptive (say, you're taking notes in a classroom).
Enable audible low battery alarm.	Low Battery Speaker Alarm Enable	Audible Battery Warning ON	Turns on the audible low battery alarm. This selection is useful if you are not likely to notice the flashing Low Battery light.
Disable main system speaker.	System Speaker Disable	Speaker OFF	Inhibits your software from using the system speaker. This choice may be helpful if you're in an environment where sounds from the computer would be disruptive.

<i>Task</i>	<i>SETUP1 option & value</i>	<i>Pop-Up Window option & value</i>	<i>Discussion</i>
Enable main system speaker.	System Speaker Enable	Speaker ON	Lets your software use the system speaker. This value is a must if your software depends on musical or other sound cues.
Create a Hard RAM disk.	Hard Ram Size xxxKB	N/A	Select the size you want for Hard RAM. You lose any data already in Hard RAM when you change the size of the disk. When you exit SETUP1 after changing this option, remember to format Hard RAM (use the FORMAT command) before trying to use it.
Update the battery pack gauge.	N/A	See discussion	This option is only available after you've removed and replaced the battery pack (when you see three question marks between E and F). Press the up arrow key. Press and hold the right arrow key until the gauge shows the approximate amount of power in the newly-installed battery pack.
Monitor the battery pack gauge.	N/A	See discussion	You can check approximately how much battery power is left. The indicator is similar to a gas gauge, displaying a range from E (empty) to F (full).

Taking Care of the Computer

The Toshiba T1200 computer is designed to provide trouble free operation for a long time. It is solidly constructed and rarely breaks down. As with any machine, however, it achieves its best performance only if you observe some basic cautions.

- ☐ Operate the computer in a room with an ambient temperature of 41-95 degrees Fahrenheit (5°-35° C), and a relative humidity of 20%-80%. If you are comfortable, so is the computer.
- ☐ Avoid sudden or extreme temperature changes.
- ☐ Keep the computer free of dust, moisture, dampness and direct exposure to sunlight.
- ☐ Keep the computer away from heat sources (such as electric heaters).
- ☐ Do not spill liquids on the computer.
- ☐ Do not drop the computer, or subject it to undue shock while you're using or transporting it.
- ☐ Do not pick up the computer by its display panel.

Clean the T1200 computer using a slightly damp cloth. Use a glass cleaner to clean the LCD screen. Spray a small amount of cleaner on a soft, clean cloth and wipe the screen gently with the cloth.

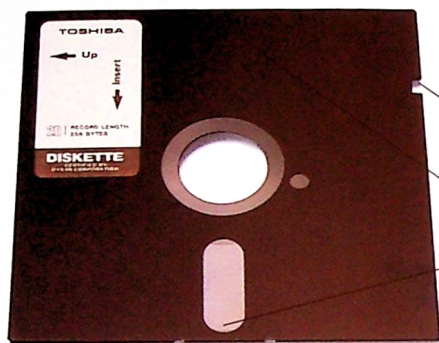
CAUTION: *Never spray cleaner directly onto the T1200 or let liquid run into any part of the computer. If you do get liquid on the computer, let it dry thoroughly before you turn it on again.*

Chapter 5

Options

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5 1/4 INCH DISKETTE

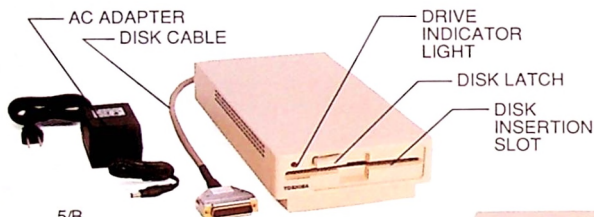


WRITE
PROTECT
NOTCH

SPACE FOR
DISK LABEL

HEAD
WINDOW

5/A



5/B

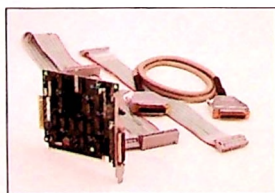


5/C

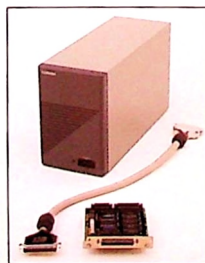
POWER ON/OFF
SWITCH



5/D



5/E



5/F

Chapter 5

Options

The T1200's options expand the computer's capabilities and make it more flexible to use. This chapter discusses each option.

The options are:

- ☐ 5 1/4" external disk drive
- ☐ Numeric keypad
- ☐ Built-in and Internal 1200 baud modems
- ☐ Additional battery packs
- ☐ Battery recharger
- ☐ Memory expansion board
- ☐ PC Floppy Link
- ☐ Expansion chassis

In addition, you can add such peripherals as an external RGB (color) monitor, a mouse, an external modem, or any other peripheral.

5 1/4" Disk Drive

The external 5 1/4" disk drive is housed in a low profile disk drive unit and comes with a connector cable and separate power adapter. Figures 5/B and 5/C show the front and back of this unit. The 5 1/4" drive supports conventional double-sided, double-density 360KB disks.

Disk Drive Parts

Familiarize yourself with these disk drive parts:

The **disk insertion slot** is a narrow horizontal opening in the middle of the unit's front where you insert a 5 1/4" diskette.

The **disk cable** has a 25-pin connector on each end. It attaches to the **PRT** port on the back of the computer and to the **25-pin port** on the back of the disk drive unit.

The **disk latch** locks the diskette (or the cardboard protector) into the drive.

The drive is packed for shipping with a cardboard protector that protects the magnetic head from vibration. Always remove it before turning the power on.

The **drive indicator light** comes on whenever the external disk drive is in use. Do not remove the disk or shut off power to the drive when this light is on.

The **power on/off switch** is a rocker switch. From the front of the drive, move it to the rear to turn the power on. Move it to the front to turn the power off.

Power is supplied to the external disk drive through the **DC IN** jack. The **DC IN** jack connects to the DC output terminal of the **AC adapter**. Use the adapter specifically designed for the external disk drive. Using any other adapter could damage the drive. When switching off the power supply, check that the drive is not in operation.

WARNING: *Be careful not to accidentally disconnect the AC adapter or disk drive cable while operating the drive. You may lose data or damage a diskette.*

Connecting the External Drive

You can connect the external 5 1/4" disk drive with the computer off (cold start) or on (warm start). The important thing is to let the operating system know you are using another drive.

To connect an external disk drive with the computer's power off, take these steps:

- 1 Turn the computer off.
- 2 Position the external disk unit next to the computer so that the cable is within easy reach of the drive. Both the computer and the front of the disk drive should face you.
- 3 Insert one end of the cable into the 25-pin port located on the back of the drive. This end may be identified as "drive." Firmly attach it with the screws provided.
- 4 Insert the other end of the cable into the **FDD** port on the computer's back and tighten its screws. This end of the cable may be identified as "system."
- 5 Confirm that the **A B DIS** switch on the left side of the computer is properly set. If you want the external disk to be drive A, set the switch to **A**. If you want the external disk to be drive B, set the switch to **B**.

HARD DISK T1200

The computer's internal 3 1/2" diskette drive becomes drive B or drive A, respectively.

The drive identifier of the hard disk drive is not affected.

DUAL DISKETTE T1200

The computer's top 3 1/2" diskette drive becomes drive B or drive A, respectively.

Using the external 5 1/4" drive disables the computer's bottom 3 1/2" diskette drive.

- 6 Plug the DC end of the AC adapter into the **DC IN** jack on the back of the external drive. Plug the AC end into a standard AC wall outlet.
- 7 Rotate the disk latch counterclockwise (it should be horizontal). If present, remove the cardboard protector from the drive.
- 8 Set the drive's on/off switch to the on position.
- 9 Turn the computer on. The computer automatically recognizes the external 5 1/4" drive and its storage capacity. You are ready to begin work.

To connect an external diskette drive while the computer is on, take these steps:

- 1 Save any work you wish to keep on a physical disk. If you do not do so, you will lose it when restarting the computer.
- 2 Follow steps two through eight in the procedure above.
- 3 Press **Ctrl + Alt + Del**. The computer restarts, taking the external drive into account.

5 1/4" Diskettes

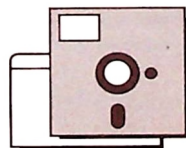
Figure 5/A shows the front of a 5 1/4" diskette enclosed in its protective jacket. Notice these parts:

- ☐ write protect notch
- ☐ space for a disk label
- ☐ the head window

During use, the disk spins inside the jacket. The disk drive's read/write head contacts the magnetic surface of the disk through the head window.

Care

Diskettes are very important to your computer system. Handle them with care. If you damage one, you could lose valuable information. A few precautions will increase the lifetime of your diskettes:



Store diskettes in the container they came in, or purchase a container specifically designed to hold 5 1/4" disks.

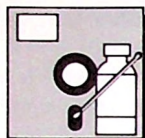
Always return diskettes to their envelopes as soon as you remove them from the disk drive. Do not leave them lying around or store them out of their envelope.

Never touch the magnetic head surface.

Do not attempt to remove the disk's protective jacket.

Do not drop, bend, or twist diskettes.

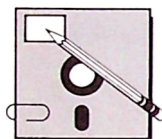
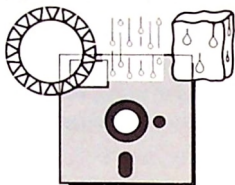




Do not attempt to clean the surface of a diskette. Cleaning fluid can prevent the disk drive from properly reading the information stored on the disk.

Keep diskettes away from direct sunlight or extreme heat and cold.

Protect the disk from dust and smoke.



Do not use an eraser on a diskette label or near a diskette. Eraser dust can easily get beneath the protective jacket.

Do not write on the label of a diskette with anything other than a soft, felt-tip pen.

Do not use paper clips or rubber bands on diskettes.

Keep disks away from all magnetic sources, such as radio speakers, television sets, and motors.

Do not place heavy objects on diskettes.



Inserting and Removing

Figure 5/D shows the correct way to insert a 5 1/4" disk into the external drive. Follow these steps:

- 1 Make sure you remove the cardboard protector before you begin.
- 2 Hold the disk with the label side up. Your fingers should be touching the label with the head window pointing away from you.
- 3 Insert the disk into the disk insertion slot. You won't be able to push it any further when it is all the way in.
- 4 Rotate the disk latch clockwise to its locked vertical position.

NOTE: Do not attempt to force a disk into or out of the drive. If it does not go in easily, take it out and check that you are inserting it properly. If it does not come out easily, have a trained repair person remove it.

Remove a diskette by rotating the disk latch counterclockwise to a horizontal position. Grasp the disk and pull it straight out of the drive. Return the disk to its envelope and store it in a disk storage box.

WARNING: *Never remove a diskette from an external drive when the drive's indicator light is lit. This light signals you that the disk is in use. If you remove a diskette while the computer is accessing data, you may damage information on the disk.*

Write Protecting

Figure 5/A shows the write protect notch located in the upper right hand corner of the 5 1/4" disk. To write protect a 5 1/4" disk, cover the notch with a small opaque press-on tab. Most disk manufacturers include these tabs with each package of disks they sell. When the notch is covered, the computer cannot alter the information on the disk.

To remove write protection, carefully peel off the tab.

Labeling

Most disk manufacturers provide press-on labels for your labeling convenience. Label diskettes that contain programs or data immediately. Points to keep in mind when labeling disks are:

- ☐ Use only press-on labels designed for use on disks.
- ☐ Write on the label first before applying it to the disk.
- ☐ If you need to write on a label after it has been put on a disk, use only a soft, felt-tip pen. Writing with a ball point pen or pencil can damage a diskette.

Numeric Keypad

This add-on option provides the same functions as the T1200's enhanced numeric keypad overlay, but on an external keypad. With the external keypad, you can always have ready access to the numeric symbols and cursor controls at the same time as you use the alphabetical keys on the main keyboard. This reduces the number of keystrokes necessary to use the numeric keypad.

Numeric Keypad Modes

The Numeric Keypad operates in two modes:

- ☐ normal mode
- ☐ numeric lock mode

Press **Num Lock** to use the number keys. The **Num Lock** indicator light comes on.

In normal mode the following keys are available on the numeric keypad: **Home**, **PgUp**, **PgDn**, **End**, **Del**, **Ins**, left arrow, right arrow, up arrow and down arrow.

In numeric lock mode, these keys are available: The number keys (0-9), and the period (.).

The -, +, and **Enter** keys are available in either mode.

Num Lock on the Numeric Keypad duplicates the function of **Num Lock** on the main keyboard.

Pressing **Ctrl + Num Lock** on the Numeric Keypad duplicates the function of **Ctrl + Pause** on the main keyboard.

Generating Characters Using ASCII Codes

Not all the ASCII characters and symbols are available through your keyboard. To print such things as musical notes, special arrows, triangles, etc., some applications let you imbed the ASCII equivalent for the symbol in text. To do this, follow these steps:

- 1 Hold **Alt** down.
- 2 Type the ASCII decimal equivalent of the character (0 through 255) on the keypad.
- 3 Release **Alt**.

The character or symbol corresponding to the ASCII code of the number you typed appears.

For example, to access the $\frac{1}{2}$ symbol (ASCII code 171), you type **171** for step three above.

The function is available in both numeric lock mode and normal mode on the Numeric Keypad.

The Built-In and Internal 1200 Baud Modems

Two types of modems are available for the T1200:

- ☐ a user-installable modem (the internal modem).
- ☐ a dealer-installable modem (the built-in modem).

Both are 1200 baud direct connect modems, suited to a wide range of applications. Both accept the Hayes modem command set, making them compatible with most communications software packages.

Each modem has certain advantages:

- ☐ The user-installable (internal) modem is on a board which slides into the system's expansion slot, replacing the metal protective cover. Use the two black screws that came with your T1200 to secure the modem in the slot.

It is Bell/CCITT switchable, making its use in other countries easier.

Its power is controlled by a switch on the modem's back panel.

- ☐ The dealer-installable (built-in) modem is on a board which is fully within the computer's case. The only external evidence of its presence is the RJ11 socket on the computer's back side. The expansion slot remains free for other uses, such as the memory expansion board option.

Its power is completely controlled through SETUP1 and the pop-up window.

NOTE: *The dealer installable, built-in modem is only Bell compatible. It is not CCITT compatible.*

To use either modem you need:

- ☐ a telephone cord with an RJ11 connector at each end.
- ☐ a suitable telecommunications software package.

You must also use SETUP1 and the pop-up window to:

- ☐ assign the correct port (usually COM1).
- ☐ enable (or turn on power to) the electronics if you're using the built-in modem.

Using the Built-In Modem

If you're using the built-in modem, follow these steps to assign the port and enable the electronics:

- 1 Run the SETUP1 command.
- 2 Use the down arrow key to move to the **Built-in Modem** option.
- 3 Use the left and right arrow keys to select **Enable**.
- 4 Use the down arrow key to move to the **Built-in RS-232C Port Assign** option.
- 5 Use the left and right arrow keys to specify the communications port you want to use. (Remember that the modem port is the opposite of the selection you make for this option.)
- 6 Press **Enter**, then select **Yes** to save your changes and return to the operating system.
- 7 Press **Fn + Sys Req**. The pop-up window appears in the lower right corner of the screen.
- 8 Use the right and left arrow keys to make your choice. Selecting **ON** supplies power to the modem; selecting **OFF** turns the power off.
- 9 Press **Fn + Sys Req** again to close the window.

Using the Internal Modem

If you're using the internal modem, follow these steps:

- 1 Run the SETUP1 command.
- 2 Use the down arrow key to move to the **Built-in Modem** option.

- 3 Use the left and right arrow keys to select **Disable**.
- 4 Use the down arrow key to move to the **Built-in RS-232C Port Assign** option.
- 5 Use the left and right arrow keys to specify the communications port you want to use. (Remember that the modem port is the opposite of the selection you make for this option.)
- 6 Press **Enter**, then select **Yes** to save your changes and return to the operating system.
- 7 Set the modem power switch to on. The on position is marked with the vertical bar; the circle indicates the off position.

Accessing the Telephone Network

Follow these steps to connect the modem to the phone network:

- 1 Plug one end of the telephone cable into the modem socket on the computer's back.
- 2 Plug the other end of the cable into a modular phone jack. (If you don't have access to a modular jack, you'll need to modify the telephone wiring in your home or office.)

You're now ready to communicate.

Once the modem establishes a physical connection, your telecommunications software takes over. You may need to configure your software to use the Hayes command set and the same serial port you set using the SETUP1 command.

Additional Battery Packs

You can increase the portability of your T1200 with additional battery packs. When the battery pack you're using gets low, you can replace it with a freshly charged battery. With additional battery packs you can greatly increase the amount of time you can use the computer away from an AC power source.

Battery Recharger

This optional accessory lets you recharge as many as three battery packs. The time required to charge battery packs in the recharger (1.5 hours per pack) is significantly less than when you recharge batteries in the T1200.

Memory Expansion Board

This option increases the internal memory of your T1200 to a total of 2MB (mega-bytes). You can use this additional memory for Hard RAM, a VDISK, or as expanded memory. The option consists of a board you slide into the computer's expansion slot.

The memory expansion board is documented in a separate manual that comes with your purchase of the option.

PC Floppy Link

Figure 5/E shows the PC Floppy Link. This option allows you to access a diskette drive connected to an IBM PC, PC/XT, or PC AT computer. The option consists of a board that fits into a PC, PC/XT or PC AT expansion slot and a cable to connect it to the computer.

The PC Floppy Link board connects to the PC's disk controller, allowing the computer to access the PC's disk drive. With this option you can transfer information from your IBM system to your computer without purchasing an external disk drive.

PC Floppy Link is documented in a separate manual that comes with your purchase of the option.

Expansion Chassis

The expansion chassis is shown in Figure 5/F. With it you can add up to five standard 8-bit data path expansion boards to the T1200 computer. The option consists of an expansion chassis with internal power supply and a cable which attaches to a connector board (available separately) that plugs into the T1200 expansion slot.

Installation and use of the expansion chassis is documented in a separate manual that comes with your purchase of the option.

Serial Interfacing

The term serial means that information is transmitted to the printer sequentially, one bit at a time, rather than in parallel, eight bits at a time. Hardware logic collects the bits and reassembles them into bytes.

The most common serial interfacing standard in the microcomputer industry was established by the Electronic Industries Association. It is called EIA RS-232-C. It describes the connectors and data signals on both sides of a serial communications interface.

You can interface most serial devices that meet the RS-232-C standard to the T1200. Interfacing involves connecting the hardware and defining communications parameters.

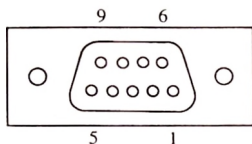
Cabling

The T1200's serial port, labeled **COMMS**, is an IBM PC style RS-232-C interface. It has an IBM PC AT, D-shell, male connector (DB-9). This type of connector has 9 pins instead of the customary 25 pins.

To connect any serial device to the T1200, you need the same cable that you would use to connect that device to the IBM PC AT. Your dealer should be able to provide this type of cable. If you can't get an IBM PC AT style cable, you may need a custom made cable.

These are the pin assignments for the T1200 serial port:

Pin	Signal	I/O	Description
1	DCD	I	Data carrier detect
2	RD	I	Serial receive data
3	SD	O	Serial transmit data
4	DTR	O	Data terminal ready
5	GND		Signal ground (0 V)
6	DSR	I	Data set ready
7	RTS	O	Request to send
8	CTS	I	Clear to send
9	RI	I	Ring indicator



There are a number of excellent books available that explain serial interfacing. If you are new to this subject, and wish to interface a non-standard serial device, we recommend that you read one of these books.

There are other considerations in serial communications. They include:

- ☐ the internal configuration of the computer (MS-DOS must know the serial port, COM1 or COM2, to which you want output directed)
- ☐ the internal configuration of the peripheral device
- ☐ the configuration of the communications parameters (the parameters of both devices must match)

Use the MODE command to set these parameters on the computer. Refer to the *MS-DOS Manual*.

Many communications software packages also provide ways to set communications parameters. Refer to your software documentation for more information.

T1200 Preset Parameter Settings

When you start the T1200 computer the serial communications parameters are automatically assigned preset values. The very first time you use the computer these values are set as shown below:

MODE Parameter Table

<i>Parameter</i>	<i>Preset Value</i>
Baud Rate	None
Parity	Even
Data Bits	7
Stop Bits	1
	2 (for baud rate of 110)

Once you set the preferred parameter values with the MODE command, these become the current (preset) values. You can use the MODE command to set the preferred parameter values in an AUTOEXEC batch file so you don't have to reset them each time you power on your computer. Refer to the discussion of batch files in your *MS-DOS Manual*.

NOTE: *Because the baud rate initially has no preset value, you cannot use a serial device without first setting at least this parameter. Most software applications that use a serial port set the parameters for you. See the application's user manual.*

Connect a Serial Printer

You can connect most serial printers to the T1200 with a standard cable that has an AT-compatible, 9-pin, D-type connector on the computer and a 25-pin connector on the printer end. Your printer manual should tell you if a wiring exception is required.

To decide how to set the serial communications parameters, find out what the preset settings are for your printer. Compare these settings with those for the T1200. You may plan to connect other serial devices and want to compare their requirements as well.

You can usually configure the printer to be compatible with the computer. The printer's manual should tell you how. The MODE command lets you set up the T1200's parameters. Whichever method you choose, the settings for the computer and the printer must be compatible.

You can find more information on attaching a serial printer and using the MODE command in the *MS-DOS Manual*.

Connect an External Modem

If for some reason the T1200's convenient internal or built-in modems aren't suited to your needs, you may wish to connect an external modem to the computer. There are two basic types of modems:

- ☐ acoustic
- ☐ direct connection (non-acoustic)

An acoustic modem doesn't use a modular phone jack. It is useful if you plan to telecommunicate from the field; say, from hotel rooms. Acoustic modems do not connect directly to the phone line. You must first make telephone connection by dialing manually. Once the connection is made, you place the telephone's handset on the modem to transmit and receive data.

Direct connection (non-acoustic) modems attach both to the computer and to the telephone line. Direct connection modems may or may not have a telephone handset connected as well.

To connect an external modem of either type to the T1200 you will almost always use a cable wired with a 9-pin connector on the computer side and a 25-pin connector on the modem side. Refer to the modem manual for specifics.

Using an external modem is very similar to using the T1200's internal modem. Once the modem establishes a physical connection to the telephone network, the telecommunications software takes over. Most software packages let you set the serial parameters through the package, eliminating the need to use the MODE command.

Chapter 6

Diagnostics

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Chapter 6

Diagnostics

The T1200 is designed for trouble free performance. However, should problems occur, follow the procedures in this chapter to determine the cause.

Problem Determination Procedures

Problem resolution involves these key points:

- ☐ Stop immediately when you recognize a problem. Further action can result in data loss or damage, and problem-related evidence might be destroyed.
- ☐ Observe what is happening. Write down what the system is doing and what actions you took immediately before the problem occurred. Print a copy of the screen using **Shift + PrtSc**.
- ☐ Isolate the problem. Use the tools available to you, such as the troubleshooting tips in this chapter and the diagnostic test program, TEST1, on the MS-DOS system disk. Try to discover the specific actions that cause the problem.
- ☐ Ask yourself questions; consider alternative solutions. The questions we suggest in this chapter are meant to help expand your intuitive thought processes, not limit your thinking to a finite series of steps.

With a little persistence, you can solve most problems. A few might require your dealer's assistance or help from the vendor of a software package. If you do consult your dealer or others, be prepared to describe the problem in detail and to reproduce it if possible.

What to Watch For

If your computer doesn't operate the way the manual says it should, observe the operation closely and record it precisely. Sometimes the system gives clues to its malfunctioning. Keep these questions in mind:

Question

Comments

Which part of the system is operating erratically?

Try to localize the problem. For example, a problem with the keyboard will usually produce different symptoms than a problem with a disk drive.

When you think you've found the problem's location, refer to the appropriate section below for some specific hints.

Do the configuration settings correctly reflect your hardware setup?
Are all the options in SETUP1 set correctly?

Check the switch settings. Run SETUP1 and check all settings.

Do you see any messages or random characters displayed on the screen?

Write them down, including their location on the screen.

Look up the messages in your software's documentation or the *MS-DOS Manual*.

Do any indicator lights come on? Which ones?
Do they stay on or blink?

Write down what you see.

Do you hear any beeps or other sounds?

Write down a description of what you hear. Include whether the beeps are high or low pitched, and whether they're long or short.

Don't overlook mechanical noises, such as disk drives and printer motors.

Is there a message on the screen?

The message could be caused by your software program, MS-DOS, or the T1200. Check your software documentation, the *MS-DOS Manual*, and this manual's Appendix entitled *Hardware Error Messages* for message explanations.

Make and keep a written record of the problem and the solution. An accurate accounting of the trouble will speed a solution if you must contact your dealer or the vendor of your software. If the problem occurs again you can save time by referring to your own personalized documentation.

Troubleshooting Outline

Here are some general hints on troubleshooting. You'll find more specific variations on these suggestions in the sections that follow, depending on just what the problem area seems to be.

- ☐ Check the **A B DIS** switch on the left side of the system.
- ☐ If you have a hard disk T1200, check the **HDD ON/OFF** switch on the back of the computer.
- ☐ Confirm that all the options in SETUP1 are set properly.
- ☐ Make sure that all devices (display, external drive, printer, etc.) are on.
- ☐ Check all cables for firm connections. Loose cables cause erroneous or intermittent signals.

If the problem is with a device you're attaching for the first time, the cable itself might be faulty or wired incorrectly. Make sure there are no loose pins in the connector, and confirm that the cable is wired properly for the peripheral.

Software

Keep in mind that you may encounter a problem caused by your software.

MS-DOS and most software packages provide messages to inform you of operating errors.

Question

Comments

Can you load (start) your software package?

If not, the media (usually a diskette) might be damaged or the program might be corrupted. Try loading another copy of the software.

Your system disk is also subject to damage or data corruption. If MS-DOS won't load, try your backup system disk.

Do you see a message?
What does it mean?

Determine whether the message is from your application or from MS-DOS.

Your software's documentation usually includes a problem solving section or a summary of error messages. The problem might be in the software package, not your computer.

The *MS-DOS Manual* contains a complete list of error messages you might encounter. If you still cannot identify the problem, follow the procedures outlined below.

Hardware

This section discusses problems caused by your computer hardware or peripherals attached to it. Some of your troubleshooting activity may involve using the diagnostic test program. The section in this chapter entitled *Diagnostic Test Program* takes you through it step by step.

System Startup Problems

The chapter entitled *Getting Started* describes what should happen when you start the computer for the first time and each time thereafter.

If the computer doesn't act the way the manual says it should when you turn it on, consider these questions:

Question

Does the **Power/Speed** light (above and to the right of the keyboard) come on?

Does anything appear on the LCD screen?

Do either of the internal disk drive lights come on after a period of time?

Do you see a message indicating that **RESUME** failed?

Do you see a message indicating that **Hard RAM** was lost?

Do you see a message indicating that there's a system configuration error?

Comments

This light should immediately glow green when you turn on the computer's power switch. If this light does not come on, refer to the section below entitled *Power Supply Problems*. If the light still doesn't come on, contact your dealer.

If you see nothing at all on the LCD, adjust the **LCD CONTRAST** dial on the computer's left side. If you still see nothing, contact your dealer.

If neither of the disk drive lights ever comes on, contact your dealer.

You've lost the contents of memory saved by **RESUME**. The internal backup battery may be dead. Press any key to continue. If this problem happens consistently, contact your dealer.

You've lost the contents of memory in **Hard RAM**. The internal backup battery may be dead. Press any key to continue. If this problem happens consistently, contact your dealer.

You've lost the contents of configuration memory. Your T1200 may not have been used for more than two months, or the internal backup battery may be dead. Use the right or left arrow key to select your hardware model, and press **Enter**.

Question**Comments**

Did the memory test stop incrementing the counter before it reached 640KB?

Try to duplicate the error: press **Ctrl + Alt + Del** to restart the system. If you can't restart the system this way, turn the computer's power off, wait at least five seconds, and turn the power back on. If the problem persists, contact your dealer.

Did the memory test reach 640KB and beep, but nothing else happened? Do you see random characters on the screen, and the system appears to not function normally?

Did the system display one of the following messages?

Make a note of the message and try to duplicate the error (see the previous comments for the procedure). If the problem persists, contact your dealer.

Keyboard Error
FDD Error
Option ROM Error
RTC Error
Disk 0 Failure

Did you miss hearing a beep following the memory test?

This is the one beep you can't defeat by changing SETUP1 and pop-up window options. If you hear no beep but everything else seems normal, the speaker in your computer is probably faulty. But this does not affect normal computer operation; your dealer can correct this problem.

Does the operating system fail to load?

Refer to the chapter entitled *Getting Started*. If all seems correct, treat this as a hardware error and consult your dealer.

Keyboard Problems

If you experience keyboard problems, consider these questions:

Question**Comments**

When you press a key do you get a character you didn't expect?

Your software may be remapping the keyboard. This involves reassigning the meaning of each key. See the user's manual for your software.

The numeric keypad overlay may be accidentally selected. Press **Fn + Num Lock** to deselect it.

The numeric lock may be accidentally selected. Make sure the **Num Lock** light is not lit. Press **Num Lock** to select or deselect numeric lock.

Run the diagnostic test program. If the problem persists, consult your dealer.

Display Problems

Question

Do you see garbage characters intermixed with what looks like the right information?

Is your screen totally blank?

Is the LCD display still blank after pressing **Fn + Home**?

Is the external monitor still blank after pressing **Fn + End**?

Is the external monitor displaying the wrong color?

Does the color look like there's something wrong with it?

If you have a backlit LCD, you may eventually notice that the electroluminescent panel doesn't get as bright as it used to. Contact your dealer to replace this panel.

Comments

Your software may need the ANSI.SYS driver in the CONFIG.SYS file. Add this line to your CONFIG.SYS file:

DRIVER=ANSI.SYS

The computer may be sending display output to the wrong location.

If you're using the LCD, press **Fn + Home** to make sure output is directed to the LCD.

If you're using an external monitor, press **Fn + End** to direct display output to the **RGB** and **COMP** ports.

You may need to set screen attributes through your software or through CHAD. The chapter entitled *Operating* explains how to use CHAD.

Make sure your AUTOEXEC.BAT file isn't setting inappropriate CHAD values.

Check the cable for a firm connection to the **RGB** port on the computer's back and to the monitor. Check the monitor for a firm connection to a working power source. Make sure the monitor is on.

Examine the problem solving section of the monitor user's manual to see if the fault lies with the device.

Check your applications software to change the color.

Run the diagnostic test program.

If the problem continues and you determine that it's not caused by software, consult your dealer.

Disk Problems

A disk may be faulty for any number of reasons. If the directory of a diskette becomes flawed, or there is something wrong with a particular file, don't panic.

General Procedures

Run CHKDSK to verify the disk's integrity and recover lost information. CHKDSK analyzes the directories, files and the file allocation table (FAT) on your disk, and produces a disk and memory status report.

Here is a summary of the CHKDSK command's syntax:



CHKDSK [*filespec*]/[F]/[V]

filespec identifies the disk or files to check.

/F fixes any problems found during the check. If you do not specify **/F**, you can review the CHKDSK report before correcting the data.

The *MS-DOS Manual* contains a complete discussion of the CHKDSK command.

Use the following questions to diagnose further problems:

Question

Comments

Can you log onto the disk after the system is already running?

If you can log onto the disk, it's possible that you can find your data and recover lost files.

Does the disk's directory appear to be damaged?

Use the DIR command. If the directory looks damaged, chances for successful data recovery are small. If the directory looks OK but a particular file is missing, you might be able to recover the file. If you (or your software) haven't written anything else to the disk since the file was erased, chances for successful data recovery are very high. A number of utility programs are available to aid the process. Call your dealer.

How much effort you want to put into recovering files depends on how much trouble you want to go to. If you've made regular backups of your data, it will probably be easier to restore the files from your backups rather than go through the often time consuming process of recovering damaged files on a disk.

Did you format this disk as a system disk, but still can't start the computer from it?

One of the MS-DOS files may be missing. For example, if you (or someone else) accidentally erased the MS-DOS COMMAND.COM file from a system disk's root directory you won't be able to start the system. Start the system with another system disk and log onto the faulty disk after the system starts.

Question

Comments

Can you run some applications but not others?

If the problem is with a fixed disk, start the computer from a system diskette in drive A and log onto drive C after the system starts.

If the COMMAND.COM file is missing from the root directory of the problem disk, copy it from your MS-DOS system diskette.

Do the data files seem to be corrupted, even though the program itself works fine?

If one of your programs works fine but another does not, the problem is likely to be with the software or the way your hardware is connected and not with the computer. Always check your hardware configuration first.

Many problems can be solved by making sure the connectors to peripherals are firmly attached.

If the computer displays what appears to be garbage on the screen, follow the data file recovery procedures in your software documentation. Once you've localized a problem you cannot solve, check with your dealer. It may be possible to recover some or all of the data on the disk.

Hard Disk Drive Problems

Question

Comments

Are you using the hard disk for the first time?

Make sure you (or your dealer) carefully followed the instructions in the chapter entitled *Getting Started*.

Does CHKDSK report physical disk errors?

If the hard disk seems to have developed problems after a period of use, run the CHKDSK command. CHKDSK will tell you if the media itself is faulty or if your files are causing poor disk performance due to fragmentation.

Run CHKDSK with the /F option. Refer to the *MS-DOS Manual* for full details on the CHKDSK command. If CHKDSK doesn't solve the problem, run the diagnostic test program.

Does your software seem to be running slower and slower?

Run CHKDSK with a *filespec* to see if your data files are fragmented. If they are, follow these steps:

- 1 Use the COPY command to copy all the files from the hard disk to multiple diskettes.
- 2 Delete all files from the hard disk. The two hidden MS-DOS files will remain on the hard disk.
- 3 Copy all files from the diskettes back to the hard disk.

There are various software utilities on the market to make copying, backing up and restoring easier. Disk optimizing programs are also available which may replace the procedure described above. Your dealer should be able to help you select such software.

WARNING: *In extreme cases you may have no choice but to reformat the hard disk. DON'T DO THIS UNTIL YOU'VE EXHAUSTED EVERY OTHER POSSIBILITY. When MS-DOS formats a disk, it erases all data that may still be intact.*

When copying new system files such as COMMAND.COM to a hard disk, make sure the versions of MS-DOS are compatible. For example, copying the MS-DOS v2.11 COMMAND.COM file to the root directory of a system using v3.30 destroys the integrity of the files already stored on the disk.

Internal Diskette Drive Problems

If you can't access a disk in an internal 3 1/2" diskette drive, consider these questions:

Question	Comments
Is the A B DIS switch correctly set?	If no external drive is attached, the switch should be set to DIS .
Have you changed the A B DIS switch since restarting the computer?	Save any open files and restart the computer (press Ctrl + Alt + Del).
Can you access another disk in the same drive?	The problem may be with the disk, not with the drive. If you have extremely important data on the disk, call your dealer. If no disks seem to work in the drive, run the diagnostic test program.

External Drive Problems

If you can't access a disk in an external 5 1/4" drive, consider these questions:

Question	Comments
Is the cable firmly connected to the computer and to the connector on the drive?	Confirm a secure connection. A loose cable may cause data to be intermittent, or complete failure of the drive to work.
Are you using the proper port?	The external drive must be connected to the EXT FDD port (the bottom 25-pin connector) on the computer's back.

Is the external drive plugged into a working power source?

Is the external drive on?

Is the **A B DIS** switch correctly set?

Have you changed the **A B DIS** switch since restarting the computer?

Can you access another disk in the same drive?

Check that the wall outlet is working. Try a different wall outlet.

If it isn't, turn it on.

Set it to **A** if the external unit is drive A. Set it to **B** if the external unit is B. Don't set it to **DIS**.

Save any open files and restart the computer (press **Ctrl + Alt + Del**) with the external drive properly connected.

The problem may be with the disk, not with the drive. If you have extremely important data on the disk, call your dealer.

If no disks seem to work in the drive, run the diagnostic test program.

Power Supply Problems

The T1200's power supply system includes the AC adapter, the computer's internal power supply, and the batteries (the removable battery pack and the two internal backup batteries). A problem in any one of these areas may effect the others. For example, a malfunctioning AC adapter will neither power the computer nor recharge the batteries. If you think there is a problem in the power supply system, consider these questions:

Question

Is the AC adapter cable firmly plugged into the **DC IN 12V** receptacle on the back of the system?

Is the AC adapter plugged into a working wall outlet (supplying from 110 to 240 volts AC)?

Is the light on the computer's top flashing or not glowing at all?

Comments

Confirm a solid connection. Make sure the connector itself is not dirty or corroded, thereby preventing a good connection.

The indicator light on the computer's top near the power switch should glow steadily: green or red. If the light is not on, the wall outlet may be faulty. Try another wall outlet.

If it is, the output of the adapter may be faulty. Follow these steps:

- 1 Unplug the AC adapter from the wall and the computer.
- 2 Remove the battery pack.
- 3 Replug the AC adapter into the wall outlet and the computer (in that order).

Question

Comments

Is the battery pack charging correctly?

- 4 Replace the battery pack.
- 5 Observe the indicator light. If it still flashes or does not glow at all, consult your dealer.

Remove the battery pack and confirm that the contacts on the battery pack and in the computer are not dirty or bent.

If the contacts appear dirty, clean them gently with a cotton swab dipped in alcohol. If the contacts appear bent or otherwise damaged, consult your dealer.

Place the battery pack back in the computer taking special care to seat it correctly.

Does the battery power the system as long as it should?

Refer to the battery chart in the chapter entitled *Operating*. Compare the times listed with the amount of time you get from your battery pack.

Confirm your system configuration. Is the modem power on? What percentage of time is the hard disk running? Is the battery fully charged to begin with? All these conditions affect battery life.

Is the battery old? After a certain number of charge/discharge cycles, NiCad batteries no longer charge fully or hold a charge. Consult your dealer.

Does the battery life of a fully-charged battery seem unusually short?

If you recharge a fully discharged battery, install it in your T1200 and find that it lasts for only a short time, follow one of these procedures.

Charge the battery again in a recharger.

or

- 1 Disconnect the AC adapter.
- 2 Turn the power on.
- 3 Turn the power off.
- 4 Reconnect the AC adapter and let the battery charge until the T1200 indicates that the battery is fully charged again.

or

- 1 With the adapter connected, turn the power off.
- 2 Remove the battery pack.
- 3 Reinstall the same battery pack and let the battery charge until the T1200 indicates that the battery is fully charged again.

Printer Problems

If the computer seems to be operating properly, but you are having trouble with a printer, consider these questions:

Question

Is the printer firmly connected to a working power outlet?

Is the printer turned on?
Is the printer on-line?

Is the cable connecting the printer to the computer attached securely?

Are you using the proper port?

For serial printers, have you set the serial communications values correctly?

Is your software directing output to the correct port?

Is the printer printing garbage?

Comments

Check that the wall outlet is working. Try a different wall outlet.

Turn it on. Confirm that you selected the printer and it is on-line, ready to use.

Confirm a secure connection. Confirm that the cable and its connectors are not damaged.

A parallel printer connects to the parallel port (**PRT**, the top 25-pin connector). A serial printer connects to the serial port (**COMMS**).

Connecting a serial printer requires special attention; the printer and computer configurations must be compatible. Use the **MODE** command to set the computer's **COMMS** port configuration.

Make sure your software is configured to recognize the printer. Parallel printers (attached to the **PRT** port) are usually identified as **LPT1**; serial printers (attached to the **COMMS** port) are usually **COM1**.

Make sure your software is properly configured for the printer you're using. Different printers use widely varying codes for such special effects as bold, italic, double width, etc. An incorrect configuration can lead to astonishing results!

If the printer is IBM-compatible, run the diagnostic test program. The problem may be in the printer.

If the printer still does not operate properly, consult your dealer.

Modem Problems

If you encounter problems with the built-in or internal modem, consider these questions:

<i>Question</i>	<i>Comments</i>
Have you enabled the communications circuitry?	<p>If you're using the built-in modem, select Built-in Modem Enable in SETUP1 and turn on the modem's power by selecting Modem ON in the pop-up window.</p> <p>If you're using the internal modem, use the modem's power switch to turn on its power. Confirm that you've selected the correct protocol (Bell/CCITT).</p>
Is the modem connected to the phone line?	Make sure the telephone cable makes a secure connection to the modem connector.
Is your software correctly configured for the modem?	The modem understands the Hayes command set. Your software may be trying to use a different series of commands.
Have you set the modem and your software for the same serial line?	<p>The modem and your software must both select either COM1 or COM2.</p> <p>Use the SETUP1 command to set the modem; your software probably has a utility option to set the serial line.</p> <p>See the modem user's manual for additional instructions.</p>

PC Floppy Link Problems

The PC Floppy Link option lets you access a diskette drive in an IBM PC, IBM PC/XT or IBM PC AT system. Consider these questions:

<i>Question</i>	<i>Comments</i>
Is your computer a real IBM PC, IBM PC/XT or IBM PC AT?	PC Floppy Link may not work on other brands of computers, even though they claim to be "IBM compatible."
Is the cable between the T1200 and the PC securely connected?	Check for a firm connection. Make sure the cable and its connectors are not damaged.
Is the A B DIS switch correctly set?	Set it to A or B . Do not set it to DIS .
Is the PC trying to access its drive(s) while the T1200 is connected?	Make sure this does not happen. Exit any software application and return to the PC's system prompt. Refer to the PC Floppy Link user's manual for further information. If the PC Floppy Link still does not operate correctly, consult your dealer.

Memory Problems

The T1200's self test runs automatically when you turn on the computer without RESUME enabled. This test checks conventional memory (up to 640KB). If your CONFIG.SYS file contains the EMM.SYS drive, it also tests expanded memory (memory above 640KB). The diagnostic test program tests all of the system's memory.

Some memory problems may mimic other hardware difficulties. If you suspect a problem in memory, run the diagnostic test program.

VDISK Problems

If you've assigned part of your system's memory to VDISK and it doesn't seem to work properly, consider these questions:

<i>Question</i>	<i>Comments</i>
Does the system disk you're booting from have all the necessary files?	Your system disk must have the VDISK.SYS driver on it. In addition, the CONFIG.SYS file (in the disk's root directory) must contain this line: device=vdisk.sys If VDISK.SYS is not in the root directory, the line must include the correct path specification.
Is there enough room on memory for the VDISK and your software applications?	Load all the memory resident programs you plan to use, then run the CHKDSK command. One of the features of this command is that, as part of checking the disk, it displays the total system memory used and total system memory available.
Are you creating a VDISK in expanded memory?	Your CONFIG.SYS file must contain these two lines, in this order: device=emm.sys device=vdisk.sys

Expanded Memory Problems

If you try to use expanded memory to run programs that require LIM-EMS, and it doesn't seem to work, consider these questions:

<i>Question</i>	<i>Comments</i>
Have you included EMM.SYS in your CONFIG.SYS file?	Add it to your CONFIG.SYS file.
Have you accidentally disabled expanded memory?	Run the SETUP1 command and confirm that this is not the case.

Question

Is EMM.SYS reporting any errors when you start the system?

Comments

EMM.SYS automatically tests expanded memory each time you start the system. Check for any error messages displayed during system startup.

Diagnostic Test Program

Before you begin the diagnostic test program, remember that should any errors occur while the test runs, check first to make sure that all cables are properly connected. Start the computer and wait for the system prompt to appear.

HARD DISK T1200

If you cannot load MS-DOS from the fixed disk, try loading it from the MS-DOS system diskette in drive A.

Log onto the disk and directory containing the MS-DOS external commands. Load the diagnostic test program. The complete name of this program is TEST1.EXE. At the MS-DOS prompt, type:



TEST1

and press **Enter**. The diagnostic test program loads into memory and this text appears:



TOSHIBA personal computer T1200 DIAGNOSTICS
version x.xx (c) Copyright TOSHIBA Corp 19xx

DIAGNOSTICS MENU :
1 - DIAGNOSTIC TEST
8 - SYSTEM CONFIGURATION
9 - EXIT TO MS-DOS

PRESS [0] - [9] KEY _

To run the diagnostics, view the system's configuration, or return to MS-DOS, type the appropriate number from the menu and press **Enter**.

Option 8 - System Configuration

When you start the system, the self test checks every switch, port, and attached device to verify that the device parameters in configuration memory match the actual devices connected.

When you select **8 - SYSTEM CONFIGURATION** from the first menu in TEST1, you see the result of the sensing done by the self test. This option does not necessarily reflect what you specify using SETUP1. For more information on SETUP1, see the chapter entitled *Operating*.

The following is a sample system configuration screen:



SYSTEM CONFIGURATION :

V4.00

- * - 640KB MEMORY
- * - LCD
- * - 1 FLOPPY DISK DRIVE(S)
- * - 1 ASYNC PORT(S)
- * - 1 HARD DISK DRIVE(S)
- * - 1 PRINTER PORT
- * - 0 MATH CO-PROCESSOR

PRESS [ENTER] KEY _

The configuration displayed on this screen should accurately reflect your system's setup. If it does not, check your configuration and the cables. If the problem persists, consult your dealer.

Press **Enter** to return to the diagnostics menu.

Option 9 - Exit to MS-DOS

Select this option to return to the system prompt. If you ever want to stop an ongoing test and return to the diagnostics menu, press **Ctrl + Break**.

Option 1 - Diagnostic Test

The diagnostic program tests the computer and attached equipment in a predefined sequence as follows:

HARD DISK T1200

- 1 system test
- 2 memory test
- 3 display test
- 4 FDD (diskette drive) test
- 5 external diskette drive test
- 6 HDD (fixed disk drive) test
- 7 printer test

DUAL DISKETTE T1200

- 1 system test
- 2 memory test
- 3 display test
- 4 top FDD (diskette drive) test
- 5 bottom FDD (diskette drive) test
- 6 external diskette drive test
- 7 printer test

Before the test begins, the program asks several questions.

The first prompt asks whether you want to test the diskette drive(s) (floppy disk drive—FDD), including the optional external 5 1/4" diskette drive, if it's attached.



Test the FDD

(Y/N)?

If you want to test the diskette drive(s), type **Y** and press **Enter**. When the sequence of diagnostic tests reaches this test, the computer writes test patterns on any disks in the drives. Be sure you have a disk in the drive(s) that does not have important information on it. The test writes over any information on the disk.

If you don't want to test the diskette drive(s), type **N** and press **Enter**. The computer skips the test.

The next prompt asks if you want to test the fixed disk (hard disk drive—HDD).



Test the HDD

(Y/N)?

To test the internal fixed disk drive, press **Y** followed by **Enter**, otherwise press **N**.

This test does not destroy data stored on the hard disk.

The next prompt asks if you want to test the printer.



Test the printer

(Y/N)?

As with the other tests, press **Y** to test the printer and **N** to skip the printer test; then press **Enter**. If you selected to test the printer the test program displays:



Compatible with IBM printer

(Y/N)?

To test an IBM compatible printer, type **Y**. For non-IBM compatible printers, press **N**.

If your printer is not IBM compatible and you specify yes, the test prints garbage. If in doubt, select **N**. The non-IBM compatible printer test works with all printers.

NOTE: If you own a Toshiba printer with dual emulation, you may use either printer test. However, the test does not automatically switch the Toshiba printer to compatible mode. Refer to your printer manual for information on setting emulation modes.

Make sure the printer is connected to the computer, the power is on, and the printer is on-line before the test begins.

System Functions and Memory

The first test is the system functions test, which does not display any message.

The second test is the memory test. It displays:



MEMORY TEST

IN PROGRESS 202000

The memory test includes expanded memory (including Hard RAM) and conventional memory.

Together the system and memory tests take approximately 60 seconds. If either test fails, the diagnostics abort. If either test aborts, do the following:

- ☐ Write down everything that appears on the screen.
- ☐ Press any key to return to the diagnostics menu.
- ☐ Consult your dealer.

When the memory test completes, TEST1 displays:



CHARACTER ATTRIBUTES

NEXT LINE SHOWS NORMAL DISPLAY.

NNNNNNNNNNNNNNNNNNNNNNNNNNNNNN

NEXT LINE SHOWS INTENSIFIED DISPLAY.

[illegible]

NEXT LINE SHOWS REVERSE DISPLAY.

RRRRRRRRRRRRRRRRRRRRRRRRRRRRRR

NEXT LINE SHOWS BLINKING DISPLAY.

[illegible]

BLUE
RED
MAGENTA
GREEN
CYAN
YELLOW
WHITE

Make sure that the line of Bs under **NEXT LINE SHOWS BLINKING DISPLAY** is actually blinking.

If you are using a color monitor, make sure that the three columns of color boxes show the colors as listed to the right of each row of boxes. The leftmost column of color boxes should show each color when used as a background color. The middle column of color boxes should show each color when used as a foreground color, and the rightmost column should show each color when used in the intensified mode.

If the screen does not match the illustration above, check the troubleshooting section of your CRT's user manual to determine if the fault is in the display. Your computer might require servicing. Call your dealer.

If the screen matches the illustration, press **Enter**.

Character Sets

The next two tests are character set tests. The first checks that the screen can display characters on a 40 column by 25 row layout (characters are wider than normal), while the second checks that the screen can display characters in the standard 80 column by 25 row layout. The two displays should look like this:



CHARACTER SET IN 40*25

[illegible][illegible]

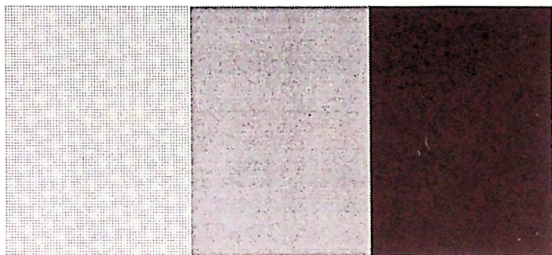
If the screens match their respective illustrations, press **Enter** to go on to the next group of tests.

Graphics Capabilities

The next tests check the LCD's graphics capabilities. These figures show the next two test screens.



320*200 GRAPHICS DISPLAY



If you have a color monitor attached, the display shown above should first appear with (from left to right) a green box, a red box and a yellow box (the yellow might look closer to brown). In a few seconds, these boxes change to cyan, magenta, and white respectively. If you have a monochrome monitor, the boxes simply lighten up after a few seconds.

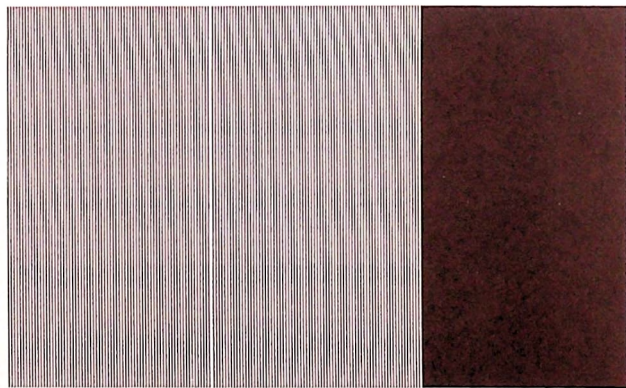


640*200 GRAPHICS DISPLAY

EVEN DOTS
DRIVEN

ODD DOTS
DRIVEN

ALL DOTS
DRIVEN



If either of these screen images do not match their associated figures, call your dealer. The computer might require service. Press **Enter** after each test screen if the screen matches its associated figure.

The final memory test is for the eight pages of video RAM, beginning with page 0 (zero). The screen display looks like this:



DISPLAY PAGE 0

As the program tests each page, the page number at the top and the numbers around the perimeter of the screen change. If anything else appears on the screen during this part of the test, contact your dealer.

Floppy Disk (Diskette) Drive(s)

After the last graphics display test, press **Enter**. The floppy disk prompt displays if you selected the floppy disk test earlier in the diagnostics sequence.



FLOPPY DISK

503100

Mount the work disk(s) on the drive(s),
then press [ENTER] key

```
[Warning : The contents of the disk(s)
will be destroyed]
```

This prompt asks you to insert a disk into each disk drive you want to test. The diskettes you insert should have no important information on them because the test destroys anything on the disks.

The disks you use must be write enabled. For 3 1/2" disks the write enable window must be closed so you cannot see through it. For 5 1/4" disks, the write protect notch must be uncovered.

These disks must also be formatted. See the chapters entitled *Operating* and *Options* for more information on write enabling disks. See the chapter entitled *Operating* for information on formatting disks.

If you have an external 5 1/4" diskette drive to test, make sure it has a disk in it and that it is turned on.

Press **Enter** when you've inserted the diskette(s) in the drive(s). The test begins and displays:



FLOPPY DISK

IN PROGRESS

503000

If there is an error, the **ABORTED** message appears. Write down the highlighted numbers and press **Ctrl + Break** to return to the diagnostics menu. If a disk drive fails, check the following:

- ☐ disk is properly formatted
- ☐ disk is not damaged

Try another disk. Consult your dealer if the drive still does not pass the test.

NOTE: If you change your mind and decide not to test a diskette, put in a write protected diskette or leave the drive empty. The test soon aborts. Press **Ctrl + Break** to return to the diagnostics menu.

Fixed Disk

If the floppy disk test passes, and you selected the fixed disk test, the program goes on to test the internal fixed disk. This message appears:



HARD DISK

IN PROGRESS

805000

If this test aborts, write down any messages and consult your dealer. The computer or the drive may require service.

Printer

If you selected the printer test at the beginning of the diagnostics sequence, it begins once the fixed disk test completes. This message appears:



PRINTER TEST

IN PROGRESS

601000

If you specified an IBM compatible printer at the beginning of the testing sequence, the test outputs this text:

```
PRINTER TEST
1. THIS LINES SHOWS NORMAL PRINT.
2. THIS LINE SHOWS COMPRESSED PRINT.
3. THIS LINE SHOWS EMPASIZED PRINT.
4. THIS LINE SHOWS DOUBLE STRIKE PRINT.
5. ALL CHARACTERS PRINT
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN
opqrstuvwxy{z{|}~_`abcdefghijklmnopqrstuvwxyz{|}
```

If you specified a non-IBM compatible printer, the test outputs this text:

```

1'%'$%&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdefghijklmnopqrstuvwxyz{|}~
2'$%&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdefghijklmnopqrstuvwxyz{|}~`_abcdfghijklmnopq
3'$%&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdfghijklmnopqr
4'$%&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdfghijklmnopqrst
5'$%&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdfghijklmnopqrstu
6'$%&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdfghijklmnopqrstuv
7'&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdfghijklmnopqrstuvw
8'&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdfghijklmnopqrstuvwx
9'&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdfghijklmnopqrstuvwxy
10'&'()*+,-./0123456789:<=>?@ABCEFGHIJKLMNOPQRSTUVWXYZ[\]`_abcdfghijklmnopqrstuvwxyz

```

If the printer test aborts or does not print the text shown above, check the following and repeat the test:

- ☐ The printer is turned on.
- ☐ The printer is ready (on-line or selected).
- ☐ The printer cable to the computer is properly connected.

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Glossary of Terms

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Appendix A

ASCII Character Codes

DEC CODE	HEX CODE	CHAR	SORT SEQ	CTRL CHAR
000	00		0	NUL
001	01		1	SOH
002	02		2	STX
003	03		3	ETX
004	04		4	EOT
005	05		5	ENQ
006	06		6	ACK
007	07		7	BEL
008	08		8	BS
009	09		9	HT
010	0A		10	LF
011	0B		11	VT
012	0C		12	FF
013	0D		13	CR
014	0E		14	SO
015	0F		15	SI
016	10		16	DLE
017	11		17	DC1
018	12		18	DC2
019	13		19	DC3
020	14		20	DC4
021	15		21	NAK
022	16		22	SYN
023	17		23	ETB
024	18		24	CAN
025	19		25	EM
026	1A		26	SUB
027	1B		27	ESC
028	1C		28	FS
029	1D		29	GS
030	1E		30	RS
031	1F		31	US

DEC CODE	HEX CODE	CHAR	SORT SEQ
032	20	SP	32
033	21	!	33
034	22	"	34
035	23	#	35
036	24	\$	36
037	25	%	37
038	26	&	38
039	27	'	39
040	28	(40
041	29)	41
042	2A	*	42
043	2B	+	43
044	2C	,	44
045	2D	-	45
046	2E	.	46
047	2F	/	47
048	30	0	48
049	31	1	49
050	32	2	50
051	33	3	51
052	34	4	52
053	35	5	53
054	36	6	54
055	37	7	55
056	38	8	56
057	39	9	57
058	3A	:	58
059	3B	;	59
060	3C	<	60
061	3D	=	61
062	3E	>	62
063	3F	?	63

DEC CODE	HEX CODE	CHAR	SORT SEQ
064	40	@	64
065	41	A	65
066	42	B	66
067	43	C	67
068	44	D	68
069	45	E	69
070	46	F	70
071	47	G	71
072	48	H	72
073	49	I	73
074	4A	J	74
075	4B	K	75
076	4C	L	76
077	4D	M	77
078	4E	N	78
079	4F	O	79
080	50	P	80
081	51	Q	81
082	52	R	82
083	53	S	83
084	54	T	84
085	55	U	85
086	56	V	86
087	57	W	87
088	58	X	88
089	59	Y	89
090	5A	Z	90
091	5B	[91
092	5C	\	92
093	5D]	93
094	5E	^	94
095	5F	_	95

DEC CODE	HEX CODE	CHAR	SORT SEQ
096	60	0	96
097	61	1	97
098	62	2	98
099	63	3	99
100	64	4	100
101	65	5	101
102	66	6	102
103	67	7	103
104	68	8	104
105	69	9	105
106	6A	A	106
107	6B	B	107
108	6C	C	108
109	6D	D	109
110	6E	E	110
111	6F	F	111
112	70	P	112
113	71	Q	113
114	72	R	114
115	73	S	115
116	74	T	116
117	75	U	117
118	76	V	118
119	77	W	119
120	78	X	120
121	79	Y	121
122	7A	Z	122
123	7B	[123
124	7C	\	124
125	7D]	125
126	7E	^	126
127	7F	_	127

DEC CODE	HEX CODE	CHAR	SORT SEQ
128	80	0	67
129	81	1	85
130	82	2	69
131	83	3	65
132	84	4	65
133	85	5	65
134	86	6	65
135	87	7	67
136	88	8	69
137	89	9	69
138	8A	A	69
139	8B	B	73
140	8C	C	73
141	8D	D	73
142	8E	E	65
143	8F	F	65
144	90	P	69
145	91	Q	65
146	92	R	65
147	93	S	79
148	94	T	79
149	95	U	79
150	96	V	85
151	97	W	85
152	98	X	89
153	99	Y	79
154	9A	Z	85
155	9B	[36
156	9C	\	36
157	9D]	36
158	9E	^	36
159	9F	_	36

DEC CODE	HEX CODE	CHAR	SORT SEQ
160	A0	┐	65
161	A1	┌	73
162	A2	┐	79
163	A3	┌	85
164	A4	┐	78
165	A5	┌	78
166	A6	┐	166
167	A7	┌	167
168	A8	┐	63
169	A9	┌	169
<hr/>			
170	AA	┐	170
171	AB	┌	171
172	AC	┐	172
173	AD	┌	33
174	AE	┐	34
175	AF	┌	34
<hr/>			
176	B0	┐	
177	B1	┌	
178	B2	┐	
179	B3	┌	
180	B4	┐	
181	B5	┌	
182	B6	┐	
183	B7	┌	
184	B8	┐	
185	B9	┌	
<hr/>			
186	BA	┐	
187	BB	┌	
188	BC	┐	
189	BD	┌	
190	BE	┐	
191	BF	┌	

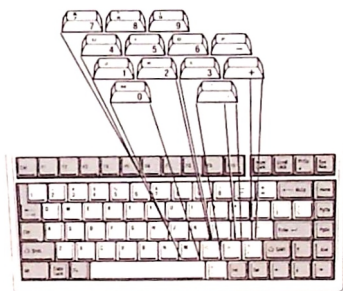
DEC CODE	HEX CODE	CHAR	SORT SEQ
192	C0	┐	
193	C1	┌	
194	C2	┐	
195	C3	┌	
196	C4	┐	
197	C5	┌	
198	C6	┐	
199	C7	┌	
200	C8	┐	
201	C9	┌	
<hr/>			
202	CA	┐	
203	CB	┌	
204	CC	┐	
205	CD	┌	
206	CE	┐	
207	CF	┌	
<hr/>			
208	DO	┐	
209	D1	┌	
210	D2	┐	
211	D3	┌	
212	D4	┐	
213	D5	┌	
214	D6	┐	
215	D7	┌	
216	D8	┐	
217	D9	┌	
<hr/>			
218	DA	┐	
219	DB	┌	
220	DC	┐	
221	DD	┌	
222	DE	┐	
223	DF	┌	

DEC CODE	HEX CODE	CHAR	SORT SEQ
224	E0	α	83
225	E1	β	
226	E2	Γ	
227	E3	Π	
228	E4	Σ	
229	E5	σ	
230	E6	μ	
231	E7	γ	
232	E8	δ	
233	E9	θ	
234	EA	Ω	
235	EB	δ	
236	EC	θ	
237	ED	φ	
238	EE	ψ	
239	EF	Π	
240	F0	≡	
241	F1	+	
242	F2	~	
243	F3	∞	
244	F4	∫	
245	F5	∫	
246	F6	∫	
247	F7	∫	
248	F8	∫	
249	F9	.	
250	FA	.	
251	FB	∫	
252	FC	∫	
253	FD	∫	
254	FE	■	
255	FF		

Appendix B

The Numeric Keypad Overlay

This appendix provides a tutorial explanation of how to use the keys with blue numbers on their fronts. These keys, located slightly to the right of the center of the keyboard, comprise the numeric keypad overlay. The chapter entitled *The Grand Tour* contains a brief description the overlay's basics.



When you press any of the keys emphasized in the illustration, you normally expect the letter or number shown on the keytop to display on the screen. You also expect to get uppercase letters if you hold **Shift** while pressing these keys.



UNITED STATES
ENHANCED PC



UNITED STATES AT



UNITED STATES XT

The illustration above shows three different types of IBM 10-key keypads.

Notice that the number keys **1** through **4**, and **6** through **9**, have legends such as **Home** and **PgUp**, indicating that they can also be used to control cursor and page

movement. The outlined keys are the same keys that comprise the T1200's numeric keypad overlay. The overlay functions just like an IBM keypad.

There are two ways to use the overlay:

- ☐ You can turn on the overlay, effectively transforming the overlaid keys into an IBM 10-key keypad.
- ☐ You can temporarily activate the overlay from the normal keyboard.

Turning On the Overlay

Fn + Num Lock turns the overlay on and off. This key combination is like a switch that controls the overlay.

Although locking the overlay on is a separate function from turning numeric lock on, pressing **Fn + Num Lock** also activates the numeric lock. Once the overlay is on, pressing **Num Lock** by itself activates and deactivates the numeric lock.

Follow these steps to turn the overlay on and activate numeric lock:

- 1 Press:



Fn + Num Lock

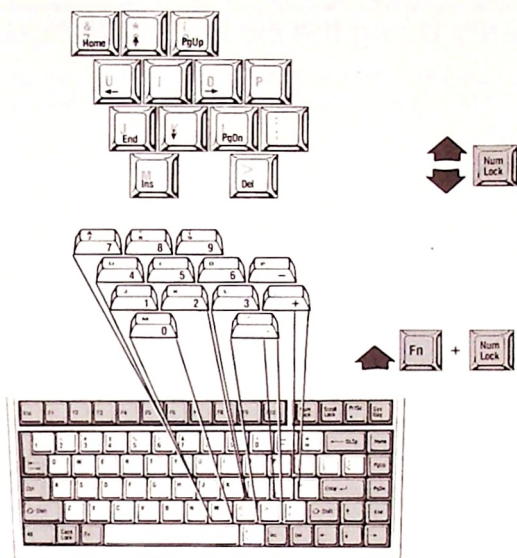
to turn on the overlay. No lights indicate that the overlay is on. The **Num Lock** light glows indicating the numeric lock is also on.

- 2 Press any of the number keys in the overlay. Use the keys as you would a 10-key keypad.
- 3 Press **Num Lock** again. The **Num Lock** light goes out indicating that the numeric lock is off. The overlay is still on.
- 4 Press any of the overlay keys. They function as cursor/page control keys.
- 5 Press:



Fn + Num Lock

again to turn off the overlay and return to normal keyboard operation (letters). If the numeric lock is on, turning the overlay off also turns the numeric lock off.



When the overlay is on, **Num Lock** affects the keys in the overlay the same way the **Num Lock** on one of the IBM keypads affects the 10-key keys. When numeric lock is on, the **Num Lock** light glows, and you get numbers when you press the keys of the overlay. When numeric lock is off you get cursor/page control keys from the overlay instead.

Just as **Shift**, without the overlay on, temporarily shifts between lowercase and uppercase letters, it also temporarily shifts between numbers and cursor/page controls when you turn the overlay on.

The only way to tell whether the overlay is on or not is to test the results by pressing one of the keys that comprise the 10-key pad.

Temporarily Using the Overlay (Overlay Off)

There may be occasions when you want to use the 10-key keypad or the 10-key arrangement of cursor/page controls without turning the overlay on with **Fn + Num Lock**.

To temporarily access the numbers of the numeric keypad overlay, follow these steps:

- 1 Press **Num Lock**. The **Num Lock** light glows.
- 2 Press and hold **Fn** while pressing the overlay keys. You get numbers.
- 3 Release **Fn** to return to normal (letters) keyboard operation.

To temporarily access the overlay's cursor/page control keys, follow these steps:

- 1 Confirm that the **Num Lock** light is off. Press **Num Lock** if necessary to turn it off.
- 2 Press and hold **Fn** while pressing the overlay keys.
- 3 Release **Fn** to return to normal (letters) keyboard operation.

Special Uses of Fn and Shift (Overlay On)

You can use **Fn** as a supershift key, with the overlay on, to temporarily access the letter keys.

- 1 Press:



Fn + Num Lock

to turn on the overlay. The **Num Lock** light glows.

- 2 To access letters, press and hold **Fn** while pressing the overlay keys.
- 3 You can press and hold **Fn** and **Shift** at the same time to access uppercase letters and **&**, *****, and **(**.
- 4 Release **Fn** to return to the overlay.

Using **Fn** to temporarily access the letters while the overlay is on works whether the **Num Lock** light is on (you're using numbers) or off (you're using cursor/page controls).

Overlay Charts

The following charts show which characters you can access through the numeric keypad overlay using all the combinations of **Shift**, **Fn**, and **Num Lock**.

Numeric Keypad Overlay Off Table

1	2	3	4
numeric lock status	overlay keys available	key to press with overlay keys	resulting overlay keys available
OFF	lowercase letters	Shift	UPPERCASE letters
		Fn	cursor control
ON	lowercase letters	Shift	UPPERCASE letters
		Fn	numbers

The chart above summarizes the normal keyboard with the overlay off.

Numeric Keypad Overlay On Table

1	2	3	4
numeric lock status	overlay keys available	key to press with overlay keys	resulting overlay keys available
OFF	cursor control	Shift	numbers
		Fn	letters
ON	numbers	Shift	cursor control
		Fn	letters

This chart summarizes the situation when the numeric keypad overlay is on.

In both charts, column 2 identifies the keys you can use when numeric lock is off or on. Column 4 summarizes which keys you can temporarily make available when you use the key in column 3 along with one of the overlay keys.

Appendix C

Configuration Options

This appendix contains detailed descriptions of the configuration options available through SETUP1 and the pop-up window.

SETUP1 Options

This section describes the configuration options available through the SETUP1. Preset values are in bold.

Internal Floppy Disk Drives

Function: Sets the number of internal diskette drives installed.

Values:

- 1 **Drive** sets one drive
- 2 **Drives** sets two drives.

Discussion: This option sets the number of diskette drives that are installed, not including any external drives.

Select 1 **Drive** if you have a hard disk T1200; select 2 **Drives** if you have dual diskette T1200.

Built-in Modem

Function: Enables or disables the optional built-in 1200 baud modem's electronics.

The function of this option is complemented (but not duplicated) by the **Modem ON/OFF** option on the pop-up window.

Values:

- Disable** shuts off the modem.
- Enable** turns on the modem.

Discussion: Enable supplies power to the serial communications electronics and the modem.

When you select disable, the system acts as if the modem does not exist at all.

You must set this option to **Enable** and the **Built-in Modem** option on the pop-up window to **Modem Power ON** in order to use the optional built-in modem.

If you have installed the optional internal 1200 baud modem in the expansion slot, the built-in modem (if installed) is always disabled regardless of how you set this option.

You must set this option to **Disable** if you install any communications adapter in the optional expansion chassis. This includes modems, local area network (LAN) cards, and other adapters such as a (BSC) Bi-Synchronous Communications card.

Power On Resume

Function: This option enables or disables the T1200's RESUME feature.

This option is duplicated by the **Mode RESUME/BOOT** option on the pop-up window.

Values:

Disable turns off the RESUME feature.

Enable turns on the RESUME feature.

Discussion: RESUME allows you to keep data in memory when you shut off the computer's power and continue where you left off when you turn the power back on. Refer to the discussion of the RESUME feature in the chapter entitled *Operating*.

Primary Display Type

Function: Use this option to change the display output location and characteristics.

Values:

- Other Type** specifies any type of display adapter not listed below installed in the expansion chassis.
- Color[40*25]** selects a 40 column by 25 line display on the LCD.
- Monochrome** selects a monochrome display installed in the expansion chassis.
- Color[80*25]** selects an 80 column by 25 line display on the LCD.

Discussion: Select **Color[80*25]** for normal use.

Select **Other** when you use an Enhanced Graphics Adapter (EGA) in the expansion chassis.

Select **Monochrome** when you use an IBM monochrome monitor or a Hercules adapter in the expansion chassis.

When you select **Other** or **Monochrome**, the computer looks for the specified display adapter in the optional expansion chassis when you boot the system. If one exists, the computer directs display output to it. If the expansion chassis is not connected, or the specified adapter isn't installed, the computer directs display output to the LCD in normal (80x25 CGA) mode.

Built-in RS-232C Port Assign.

Function: Use this option to set the port assignment for the **COMMS** port.

Values:

COM1 sets the serial port to COM1 and sets the internal or built-in modem to COM2.

COM2 sets the serial port to COM2 and sets the internal or built-in modem to COM1.

Discussion: Select **COM1** for normal use. You must set this option to **COM1** if you install any communications adapter in the optional expansion chassis.

Printer Port Bi-directional

Function: This option lets you set the parallel (**PRT**) port for both input and output.

Values:

Disable returns the port to normal unidirectional operation (output only).

Enable activates this feature.

Discussion: On most computers, the parallel port can only output data from the system to the peripheral device, usually a printer. Although your software may not support input from the parallel port, this special feature of the T1200 is provided for future use.

Low Battery Speaker Alarm

Function: Use this option to enable or disable the audible low battery alarm.

This option is duplicated by the **Audible Battery Warning ON/OFF** option on the pop-up window.

Values:

Disable turns off the audible battery alarm.

Enable turns on the audible battery alarm.

Discussion: If enabled, the audible alarm sounds when the low battery indicator light (above and to the right of the keyboard) glows.

System Speaker

Function: Use this option to enable or disable the system speaker. This option is duplicated by the **Speaker ON/OFF** option on the pop-up window.

Values:

Disable turns the speaker off.

Enable turns the speaker on.

Discussion: If you select **Disable**, your software applications cannot use the system speaker.

The value of this option has no effect on the beep you hear when you boot the system or the audible low battery alarm.

Built-in Expanded Memory Port Address

Function: This option sets the port address for expanded memory.

Values:

208H These are port addresses.

218H

258H

268H

2A8H

2B8H

2E8H

Disable disables expanded memory.

Discussion: Do not select **Disable** if you want to create a Hard RAM disk or use any expanded memory. When you select **Disable**, you automatically disable all functions of expanded memory.

Do not change this option unless your software requires a different EMS port address; refer to your software documentation for details.

Hard Ram Size

Function: This option sets the amount of expanded memory you want to use for Hard RAM.

Values:

0KB
128KB
192KB
256KB
320KB
384KB

These are the incremental amounts of memory you can set aside for Hard RAM. (More values appear if you have the optional memory expansion card installed.)

Discussion: After you set the size of Hard RAM with this option, you must format the Hard RAM disk (refer to the section entitled *Hard RAM* in the chapter entitled *Operating* for instructions).

WARNING: *Anytime you change the size of the Hard RAM disk, you lose all data currently in Hard RAM. Be sure you've backed up all your data to a physical disk from Hard RAM before changing this option. You must use the FORMAT command each time you change the size of Hard RAM.*

Keyboard Type

Values:

84-keys selects IBM PC/XT keyboard emulation.
101-keys selects IBM enhanced keyboard emulation.

Pop-Up Window Options

This section describes the configuration options available through the pop-up window.

Remaining Battery Capacity

Function: Use this gauge to monitor approximately how much power is left in the main battery.

Values:

E means empty.

F means full.

??? means the battery pack has been removed and replaced; the system does not know how much power the new battery has.

Discussion: As you use the computer on battery power, this option graphically shows the approximate amount of power you have left. Possible values range from full (F) to empty (E). The display is always automatically reset to full when a discharged battery pack reaches a full charge while in the system.

If you discharge a battery to the extent that the system is forced to shut off, the battery gauge is automatically reset to empty.

When the prompt shows three question marks (???) between empty and full, you can update the indicator. The only time this happens is when you remove and replace the battery. Press the up arrow once and then use the right and left arrow keys to set the amount of power you estimate the battery contains.

For this indicator to be useful, you should reset the gauge every time you change the battery pack.

Built-in Modem Power

Function: Use this option to turn power on or off to the optional built-in 1200 baud modem.

Values:

ON turns the power on.

OFF turns the power off.

Discussion: This option complements the **Built-in Modem Disable/Enable** option in SETUP1.

To use the built-in modem, you must select **Enable** in SETUP1 and **ON** in the pop-up window.

Speaker

Function: Turns the computer's internal speaker on or off.

Values:

ON turns the speaker on.

OFF turns the speaker off.

Discussion: This option duplicates the function of the **System Speaker** option in SETUP1.

Mode

Function: Enables or disables the T1200's RESUME feature.

Values:

RESUME enables the RESUME feature.

BOOT disables the RESUME feature.

Discussion: This option duplicates the function of the **Power On Resume** option in SETUP1.

Audible Battery Warning

Function: Enables or disables the audible low battery warning.

Values:

ON enables the audible low battery warning.

OFF disables the audible low battery warning.

Discussion: This option duplicates the function of the **Low Battery Alarm** option in SETUP1.

Appendix D

Hardware Error Messages

Most error messages you encounter are likely to be from your software application or the MS-DOS command you're currently running. The *MS-DOS Manual* contains a list of all the possible messages from MS-DOS and its commands. Your software user's manual probably contains a similar list of messages that the application provides.

This appendix documents messages that relate directly to the hardware of your T1200. These messages are not MS-DOS messages, so they don't appear in the *MS-DOS Manual*.



WARNING: DATA IN HARD RAM WAS LOST
YOU MUST FORMAT HARD RAM BEFORE USE
PRESS ANY KEY TO CONTINUE

A checksum error has been detected in Hard RAM upon system power-up. Possible causes of this error are:

- ☐ You changed the size of Hard RAM using SETUP1. If you changed the size of Hard RAM but had not previously formatted the Hard RAM drive, this message may not appear.
- ☐ The data in Hard RAM was lost due to discharge of the backup battery.



WARNING: RESUME FAILURE
PRESS ANY KEY TO CONTINUE

A problem has been detected in memory causing the loss of data protected by RESUME. Possible reasons for this error are:

- ☐ The backup battery is completely discharged, the main battery pack is discharged or not installed (you've removed it), and the system is not receiving power through the AC adapter.
- ☐ You turned the power off while the system was accessing an internal diskette drive.

- ☐ You are using an EGA or other display adapter on the expansion chassis.



*** SYSTEM CONFIGURATION ERROR ***

A checksum error occurred in the configuration RAM.
Select one of the following types.
[2-FDD type / 1-HDD & 1-FDD type]
Set by Right or Left Cursor & Enter key.

A checksum error has been detected in configuration memory. Any custom settings you've made in SETUP1 have been lost.

Select **2-FDD type** for dual diskette models; select **1-HDD & 1-FDD type** for hard disk models.

This message may appear the first time you power up your T1200; it may also appear if you haven't used your T1200 for a long period of time (approximately two months or more). Follow the instructions in the chapter entitled *Operating* to reset your configuration settings.



Keyboard Error

FDD Error

Option ROM Error

RTC Error

Disk 0 Failure

Write down a log of everything you did before the error happened. To confirm the problem, check the current values in SETUP1 (if you can access the program), then turn off the computer and check all cable connections and switches. Restart the system using **Ctrl + Alt + Del**. If the test fails again, consult your dealer.

Glossary of Terms

A

AC: Alternating Current

allocate: Assign space or function for a specific task.

alphanumeric: Consisting of letters, numbers and other symbols, such as punctuation marks or mathematical symbols. Refers to the keyboard characters and character set available for the various data transfer operations of the computer.

analog signal: A signal whose characteristics such as amplitude and frequency vary in proportion to (are an analog of) the value to be transmitted. Voice communications are analog signals.

antistatic: A material, such as packing material, that is treated to prevent the build-up of static electricity. The static charges gradually dissipate instead of building up to a sudden discharge.

application: A group of programs that together are used for a specific task such as accounting, financial planning, spreadsheets, word processing, games, etc.

ASCII: The American Standard Code for Information Interchange is a set of 256 binary codes that represent the most commonly used letters, numbers and symbols.

asynchronous: Lacking regular time relationship. As applied to computer communications, asynchronous refers to the method of transmitting data that does not require a steady stream of bits to be transmitted at regular time intervals.

asynchronous communications parameters: Values that determine how a character is encoded for transmission. These parameters include baud rate, parity, number of data bits and the number of stop bits.

AUTOEXEC.BAT: A batch file that performs a desired set of startup procedures. The batch file is executed automatically each time you start MS-DOS.

AUX: Short for Auxiliary. Another name for the communications port COM1.

B

backlit display: An LCD illuminated from the rear. This technology provides higher image contrast and improved legibility, but requires more power to operate than a reflective display (see reflective display).

backup: A duplicate copy of files kept as a spare in case the original is destroyed.

baud (baud rate): Rate of character transmission over communication devices such as printers, terminals and modems. In standard usage, one baud is equivalent to approximately one bit per second. It is named for Emil Baudot, a pioneer in printing telegraphy.

Bell 103/212A: The American standard for modem operations. See CCITT.

binary: The base two number system composed of zeros and ones (off or on), used by most digital computers. The rightmost digit of a binary number has a value of 1, the next a value of 2, then 4, 8, 16, and so on. For example, the binary number 101 has a value of 5 (see ASCII).

BIOS: Basic Input Output System; the firmware that controls data flow within the computer.

bit: A contraction of Binary digit, the basic unit of information used by the computer. It is either zero or one. Eight bits equal one byte (see byte).

boot: Short for bootstrap. A bootstrap program places a computer in a desired state by means of its own actions. For example, a bootstrap program readies the computer for use. This program issues the instructions that bring the rest of the program into the computer's memory.

board: A systematic arrangement of electronic components, such as chips, attached to a board or card for performing some function or for increasing current capabilities of the system. A board is typically plugged into the computer's main processor or into the connectors in the expansion chassis.

bps: Bits Per Second. The rate of transmission speed.

buffer: The portion of the computer's memory where data is temporarily stored. Buffers often compensate for differences in the rate of flow from one device to another.

byte: The representation of a single character. A sequence of eight bits treated as a single unit; also the smallest addressable unit within the system.

C

cache memory: A technique used by software packages for speeding processing by storing frequently-used information in memory.

card: Synonym for board.

capacity: Amount of data that can be stored on a magnetic storage device such as a diskette or fixed disk. It is usually described in terms of K bytes (KB), where one KB = 1024 bytes.

carrier: A single frequency or tone generated by a modem when a connection is made.

CCITT: Consultative Committee International Telegraph and Telephone. The CCITT is an advisory committee established under the United Nations to recommend worldwide communications standards. European asynchronous data communications use the CCITT standard. If you use the internal modem (which fits in the computer's expansion slot), a switch on the modem's panel lets you select Bell (the American standard) or CCITT.

CD: Carrier Detect.

Centronics: The name of the printer manufacturer whose method of data transmission between a parallel printer and a computer has become an industry standard.

character: Synonym for byte.

chassis: Metal frame which contains the computer.

chip: A small semiconductor containing computer logic and circuitry for processing, memory, and input/output functions. Chips are soldered on a printed circuit board to form the microcomputer.

CMOS: Complementary metal-oxide semiconductor.

cold start: Starting a computer that is currently off.

COM1 and COM2: The MS-DOS names for serial ports. The built-in and internal modems are preset to COM2.

command state: A functional state of a modem where it is off line, waiting for commands.

commands: Instructions you enter at the terminal keyboard that direct the actions of the computer.

communications: The means by which a computer transmits and receives data to and from another computer or device.

compatibility: 1) The ability of one computer to accept and process data in the same manner as another computer without modifying the data or the media upon which it is being transferred. 2) Capable of connecting to or communicating with another system or component.

components: Elements or parts (of a system) which serve to constitute the whole (system).

computer program: A set of instructions written for a computer that enable it to achieve a desired result.

computer system: A combination of hardware, software, firmware, and peripheral components assembled to satisfy a particular goal or set of goals.

configuration: 1) The set of devices available to the system (such as terminals, printers, disk drives, etc). 2) The final arrangement of the parts of a thing. 3) The values of certain parts of the system; for example, the configuration of serial port COM1 or COM2 includes the baud rate, parity, data bits, and stop bits.

control keys: Key or sequence of keys entered at the keyboard to initiate a particular function within a program.

CPS: Characters Per Second.

CPU: Central Processing Unit. The brain of the computer where it interprets and executes instructions.

CRT: Cathode Ray Tube, a vacuum tube in which beams projected on a fluorescent screen produce luminous spots. An example is the television set.

CTS: (Clear to Send) An RS-232-C signal used in the exchange of data between the computer and a serial device.

cursor: A small, blinking rectangle or line that indicates position on the display screen.

D

DC: Direct Current.

DCE: Data Communication Equipment; DCE and DTE indicate whether the specific equipment transmits on pin 3 and receives on pin 2 (DCE) or transmits on pin 2 and receives on pin 3 (DTE).

data: Information that is factual, measurable or statistical and which is ordered or formatted to be computer processed, stored, or retrieved.

data bits: A data communications parameter controlling the number of bits (binary digits) used to make up a byte. If data bits = 7 the computer can generate 128 unique characters. If data bits = 8 the computer can generate 256 unique characters.

default: The value automatically selected by the processor in the absence of any instructions.

delete: To remove data from a disk or other data storage device. Synonymous with erase.

disk: A diskette or fixed disk that consists of a circular platter coated with magnetic material.

disk storage: Storing data on magnetic disk. Data is arranged in concentric tracks much like a phonograph record.

disk drive: The mechanism designed to rotate a magnetic disk at high speed past a read-write head.

diskette: A small, flexible disk that stores magnetically encoded data used on a microcomputer.

display: A CRT, plasma display or LCD used as a computer output device.

documentation: The set of manuals and/or other instructions written for the users of the computer system. Computer system documentation typically includes procedural and tutorial information as well as system/subsystem/component functional and performance specifications.

driver: A software program, generally part of the operating system, that controls a specific piece of hardware (frequently a peripheral device).

DSR: Data Set Ready; an RS-232-C signal used in the exchange of data between the computer and a printer or modem.

DTE: Data Terminal Equipment; see DCE.

DTMF: (Dual Tone Multi Frequency) See Touch-Tone Dialing.

DTR: Data Terminal Ready; an RS-232-C signal used in the exchange of data between the computer and the printer.

duplex: A communications parameter, indicating the number of channels used. Half-duplex conducts alternating two-way communication over a single channel. Full-duplex conducts simultaneous two-way communication over two channels.

E

echo: A portion of a transmitted signal is returned to the sending device. For example, when a computer receives back a portion of a signal it has just transmitted to a CRT (or other peripheral device) and then retransmits it to a printer, the printer is said to echo the CRT.

EIA: Electronic Industries Association

emulation: A technique where a computer component is made to behave exactly like another component.

erase: See delete.

escape: 1) ASCII 27, frequently used to send commands to peripheral devices such as printers and modems. 2) A means of aborting the task currently in progress. 3) A code used to force the internal modem back to the command state from the on-line state.

escape guard time: A time before and after the escape code sent to the modem which distinguishes between escapes that are part of the transmitted data, and escapes that are intended as a command to the modem.

execute: The process of interpreting and carrying out a machine instruction.

expansion chassis: The external chassis with connectors for additional boards.

F

file: A single, named collection of data, such as a manuscript or a list of addresses, that can be recalled by the computer.

firmware: A set of instructions built into the hardware which controls and directs a microprocessor's activities.

fixed disk: The hard disk referred to as drive C. It is called fixed because the factory installs it and only a trained engineer can remove it for servicing.

floppy disk: Another name for diskette.

format: The process of readying a blank disk for its first use. Formatting establishes the structure of the disk that the operating system expects before it writes files or programs onto the disk.

full duplex: A mode of communication that uses two channels to conduct simultaneous two-way communication.

function keys: The keys labelled **F1** through **F10** that tell the computer to perform certain functions.

G

GND: Ground; an RS-232-C signal used in the exchange of data between the computer and a serial printer or modem.

graphics: Information presented as drawings, pictures or other images, such as charts or graphs.

H

handshake: The series of signals between a computer and another peripheral device (for example a modem) that establishes the parameters required for passing data.

hard disk: See fixed disk.

Hard RAM: A portion of random access memory (RAM) you set aside to function as a virtual disk. There are two differences between Hard RAM and VDISK. 1) VDISK occupies a portion of standard memory (within the standard IBM 640KB limit. Hard RAM uses expanded memory outside the 640KB limit. 2) Turning the computer's power off causes it to lose information stored in VDISK. As long as the computer's battery is charged or the AC adapter is plugged into the wall outlet, the data stored in Hard RAM remains intact even when you turn the power switch off.) See VDISK.

hardware: The physical electronic and mechanical components of a computer system: typically, the computer itself, external disk drives, etc. Contrast: software, firmware.

host computer: The computer that controls, regulates, and transmits information to a device or another computer.

I

input: The data submitted to a computer, communication device or other peripheral device from the keyboard or external or internal storage devices. The data sent (or output) by the sending computer is input for the receiving computer.

interface: 1) Hardware and/or software components of a system used specifically to connect one system or device to another. 2) To physically connect one system or device to another so that information can be exchanged. 3) The point of contact between operator and machine, for example, the keyboard.

I/O: The symbolic notation for Input/Output. Refers to acceptance and transfer of data to and from a computer.

I/O devices: Devices used to communicate with the computer and transfer data to and from it.

instruction: Statement in a computer program specifying a particular function or task to be performed.

J

jumper: A hardware option that allows you to change the hardware characteristics by electrically connecting two points of a circuit board.

K

K: Taken from the Greek word kilo, meaning 1000; often used as equivalent to 1024, or 2 raised to the 10th power (see byte and KB).

KB: Kilobyte, 1024 bytes.

keyboard: An input device containing switches that are activated by manually pressing marked keys. Each keystroke activates a switch that transmits a specific code to the computer. For each key, the transmitted code is, in turn, representative of the (ASCII) character marked on the key.

kilobyte: See KB.

L

LCD: Liquid crystal display.

LSI: Large scale integrated, as in large scale integrated circuits.

M

menu: A list of options that appears on the screen, along with an invitation to make a selection.

main board: See motherboard.

microprocessor: A hardware component contained in a single integrated circuit that carries out instructions.

mode: A method of operation, for example, the binary mode or the alphanumeric mode. Also the value of an item occurring most frequently in a series of statistical data.

modem: A device that converts (MODulates) digital data for transmission over telephone lines and then converts modulated data (DEModulates) to digital format when received.

monitor: Synonymous with CRT.

motherboard: A name sometimes used to refer to the main hardware (printed circuit board) in the processing equipment. It contains integrated circuits for performing various functions as well as connectors for adding an expansion chassis or other boards.

N

non-system disk: A diskette for storing programs and data that cannot be used to start the computer. See system disk.

non-volatile memory: memory, usually of the read-only variety (ROM), that is capable of permanently storing information. Turning the computer's power off does not alter data stored in non-volatile memory.

O

OCR wand: Optical Character Reader, a device that reads hand written or machine printed symbols into a computer.

on-line state: A functional state of a peripheral where it is ready to receive or transmit data.

operating system: The overall controlling software that facilitates operating and using a computer. Operating system functions include the creation of programs and data files, and controlling the transmission and receipt (input/output) of data to and from memory and peripheral devices. Toshiba portable computers use the MS-DOS operating system.

operating system diskette: The disk containing the operating system.

output: The results of a computer operation. Output commonly indicates data 1) printed on paper, 2) displayed at a terminal, 3) sent through the serial port or modem, or 4) stored on some magnetic media.

P

parallel: In computer terminology, usually refers to two or more processes or events that can occur simultaneously, and without interfering with each other. Contrast: serial.

parallel interface: Refers to a type of information exchange that transmits characters along seven or eight data lines, one bit per line. Contrast: serial interface.

partition: A portion, or all, of a fixed (hard) disk set aside for use by an operating system such as MS-DOS.

parity: 1) The symmetrical relationship between two parameter values (integers) both of which are either on or off; odd or even; 0 or 1. 2) In serial communications, an error detection bit that is added to a group of data bits making the sum of the bits even or odd. Parity can be set to none, odd or even.

PCB: See printed circuit board.

pel: See pixel.

peripheral device: An I/O device that is external to the central processor and/or main memory. The device is connected to the processor or memory via an interface device or card (PC board).

pixel: A picture element. The smallest dot that can be made on a display or printer.

port: The electrical connection through which the computer sends and receives data to and from devices or other computers.

Printed Circuit Board (PCB): A hardware component of a processor to which integrated circuits and other components are attached. The board itself is typically flat and rectangular, and constructed of fiberglass, to form the attachment surface.

prompt: An audible or visible signal to the system user that some process is complete or some user action is required. Also used to signify a need for further input and/or location of needed input.

protocol: A collection of rules and conventions used for the orderly transfer of information between devices.

pulse dialing: One of two types of dialing that uses rotary pulses to generate the telephone number.

R

Radio Frequency Interference Shield (RFI): A metal shield enclosing the printed circuit boards of the printer to prevent radio and TV interference.

RAM, Random Access Memory: High speed memory locations within the computer circuitry itself.

RD: Receive Data; an RS-232-C signal used in the exchange of data between the computer and a serial printer or modem.

read/write heads: The electro-mechanical heads that write data on a hard disk or diskette and read data from a hard disk or diskette.

reboot: To start the computer again. See boot.

reflective display: An LCD which requires ambient light to produce a legible image (see backlit display).

RESUME: A feature of the T1200 that lets you turn the computer's power off and back on again without exiting from your software application first.

RFI: Radio Frequency Interference; all computer equipment generates radio frequency signals. The FCC regulates the amount of RFI a computing device can leak past its shielding. A Class A device is sufficient for office use. Class B is a more stringent classification for home equipment use. The Toshiba computer complies with Class B computing device regulations.

RJ11: A modular telephone connector.

ROM: Read Only Memory; a non-volatile memory chip manufactured to contain certain information.

RS-232-C: The Electronic Industries Association (EIA) interface standard that describes control, data and status signals for cable connectors mating with computers, printers, communications and other peripheral devices.

RTS: Request to Send; an RS-232-C signal used in the exchange of data between the computer and a serial printer or modem.

S

SD: Send Data; an RS-232-C signal used in the exchange of data between the computer and a printer or modem.

serial: The handling of data bits one after the other.

serial communications: A communications technique that uses as few as two interconnecting wires to send bits one after another.

serial interface: An interface between systems or system components in which information is transmitted sequentially, one unit at a time. The bits are collected over a matter of microseconds until a byte is determined by the pattern of highs and lows. In computer systems with a serial interface the transmission rate is one bit at a time. Contrast: Parallel interface.

serial port: The communications port (COM1 or COM2) to which devices, such as a modem, a mouse or a serial printer can be attached.

SIO: Serial Input/Output; the electronic methodology used in serial data transmission.

software: The set of programs, procedures and related documentation associated with a computer system. Specifically refers to computer programs that direct and control the computer system's activities. Contrast: hardware.

stop bit: One or more bits of a byte that follow the transmitted character or group codes in asynchronous serial communications.

super shift key: A key that allows you to access certain features or characters that are not normally accessible from the keyboard.

synchronous: Having a constant time interval between successive bits, characters or events.

system disk: A disk that has been formatted as a system disk. It has two hidden files and the COMMAND.COM file. You can start the computer using a system disk.

T

terminal: A typewriter-like keyboard and CRT display screen connected to the computer for input/output of data.

Touch-Tone dialing: A dialing technique used by the modem. Each digit (or # or *) is represented by two tones. Also called DTMF, Dual Tone Multi Frequency.

U

UART: Universal Asynchronous Receiver/Transmitter; the link between a serial device, such as a modem, and the computer. The UART assembles bits, received from a serial port into characters (bytes) and disassembles bytes into bits for asynchronous transmission.

V

VDISK: Virtual disk; part of the computer's Random Access Memory assigned to simulate a disk. VDISK is a feature of MS-DOS. Hard RAM (the other form of virtual disk) is a feature of your Toshiba computer. See Hard RAM.

volatile memory: Random access memory (RAM) that is capable of storing information as long as the computer is connected to a power source.

W

warm start: Restarting or resetting a computer without turning it off.

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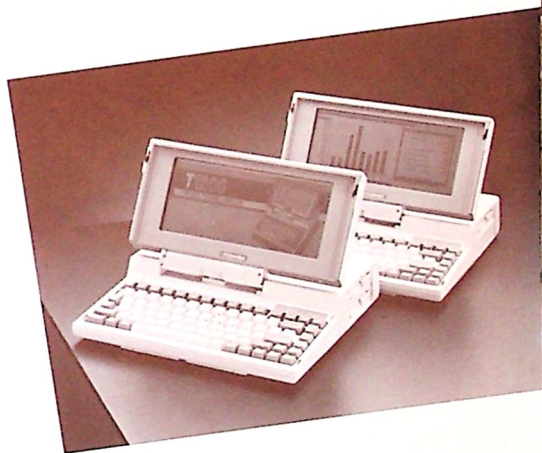
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Quick Reference



T1200

Batteries

Change a battery pack when the **Low Batt** light flashes or glows.

Changing a Battery Pack

- 1 With one hand, slide the **BATTERY RELEASE** to the left (as you face the computer from behind).
- 2 With the other hand, lift the battery out.
- 3 With one hand, slide the **BATTERY RELEASE** to the left and put the battery pack into the slot with the pack's connector facing the front of the computer.
- 4 Release the **BATTERY RELEASE**.

Charging Batteries

- 1 Plug the AC adapter into a working wall outlet.
- 2 Plug the round plug of the AC adapter into the computer.

The battery recharges with the computer on or off.

Battery Life

Maximum operating times using a fully-charged battery pack with approximately 10% diskette use and 20% hard disk use are:

Battery Life Table

<i>Configuration</i>	<i>Maximum Time</i>	
	<i>Reflective</i>	<i>Backlit</i>
Computer off		
memory only, main battery pack	10 days	10 days
memory only, backup battery only	2 days	2 days
Computer on, modem not installed		
no disk use	7.5 hrs	2.8 hrs
1 or 2 internal diskette drives in use	6 hrs	2.6 hrs
1 internal diskette drive and hard disk drive in use	2 hrs	1.4 hrs
Computer on, modem disabled		
no disk use	6.2 hrs	2.6 hrs
1 or 2 internal diskette drives in use	5.7 hrs	2.6 hrs
1 internal diskette drive and hard disk drive in use	1.9 hrs	1.3 hrs
Computer on, modem enabled		
1 or 2 internal diskette drives in use	4.4 hrs	2.3 hrs
1 internal diskette drive and hard disk drive in use	1.7 hrs	1.2 hrs

Normal Startup From Hard RAM

Note: You can follow this procedure only if you have already set up Hard RAM and formatted it as a system disk.

- 1 Confirm that no diskette drive contains a disk.
- 2 If you have a hard disk model T1200, confirm HDD set to **OFF**.
- 3 Turn on the power switch.
- 4 Confirm date and time.
See *Normal Startup from Hard Disk* for instructions.
- 5 Confirm MS-DOS prompt: **C>**.

MS-DOS Keys

These keys work with MS-DOS:

Esc or BkSp	corrects a mistake
Ctrl + C or Ctrl + Break	interrupts a command
Ctrl + S or Ctrl + Stop	stops scrolling
Shift + PrtSc	prints screen display
Ctrl + Alt + Del	restarts the computer
d + : , then Enter	changes current disk drive (<i>d</i> is drive identifier)

Soft Keys

The soft keys provide additional keyboard functions:

Fn + End	selects the external CRT
Fn + Home	selects the LCD
Fn + PgDn	selects slow processor speed
Fn + PgUp	selects fast processor speed
Fn + →	selects alternate display font
Fn + Num Lock	turns the numeric keypad overlay on/off
Fn + Sys Req	accesses pop-up window
Num Lock	turns the numeric lock off/on

Overlay Tables

Numeric Keypad Overlay ON Table

1	2	3	4
numeric lock status	overlay keys available	key to press with overlay keys	resulting overlay keys available
OFF	cursor control	Shift	numbers
		Fn	letters
ON	numbers	Shift	cursor control
		Fn	letters

Numeric Keypad Overlay OFF Table

1	2	3	4
numeric lock status	overlay keys available	key to press with overlay keys	resulting overlay keys available
OFF	lowercase letters	Shift	UPPERCASE letters
		Fn	cursor control
ON	lowercase letters	Shift	UPPERCASE letters
		Fn	numbers

Running Software

- 1 Change logged drive or directory, if necessary, to access the startup command.
- 2 Confirm that your software package is available on the current drive/directory. If in doubt, type **DIR** and press **Enter**.
- 3 Type the name of the command for your software package and press **Enter**.

Turning on the Built-in Modem

- 1 Run **SETUP1** and select **Enable** from the **Built-in Modem** option.
- 2 Press **Fn + Sys Req** to access the pop-up window and select **Built-in Modem Power ON**.

Turning on the Internal Modem

- 1 Run **SETUP1** and select **Disable** from the **Built-in Modem** option.
- 2 Turn the internal modem's power on.

Batteries

Change a battery pack when the **Low Batt** light flashes or glows.

Changing a Battery Pack

- 1 With one hand, slide the **BATTERY RELEASE** to the left (as you face the computer from behind).
- 2 With the other hand, lift the battery out.
- 3 With one hand, slide the **BATTERY RELEASE** to the left and put the battery pack into the slot with the pack's connector facing the front of the computer.
- 4 Release the **BATTERY RELEASE**.

Charging Batteries

- 1 Plug the AC adapter into a working wall outlet.
- 2 Plug the round plug of the AC adapter into the computer.

The battery recharges with the computer on or off.

Battery Life

Maximum operating times using a fully-charged battery pack with approximately 10% diskette use and 20% hard disk use are:

Battery Life Table

<i>Configuration</i>	<i>Maximum Time</i>	
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no disk use	6.2 hrs	2.6 hrs
1 or 2 internal diskette drives in use	5.7 hrs	2.6 hrs
1 internal diskette drive and hard disk drive in use	1.9 hrs	1.3 hrs
Computer on, modem enabled		
1 or 2 internal diskette drives in use	4.4 hrs	2.3 hrs
1 internal diskette drive and hard disk drive in use	1.7 hrs	1.2 hrs

Configuring the T1200

Use the SETUP1 command and the pop-up window to set system configuration values.

Using SETUP1

Type **SETUP1** and press **Enter** at the system prompt.

SETUP1 Options

Preset values are in **bold**. Refer to the *User's Manual* for expanded explanations of each option.

SETUP1 Table

Configuration	Values
Internal Floppy Disk Drives (sets the number of internal diskette drives)	1 Drive , 2 Drives
Built-in Modem (enables the built-in modem's electronics)	Disable, Enable
Power On Resume (enables the T1200's RESUME feature)	Disable , Enable
Primary Display Type (directs the T1200 to look for a monochrome or EGA display adapter in the optional expansion chassis)	OtherType, Color[40*25] Monochrome, Color[80*25]
Built-in RS-232C Port Assign. (assigns COMMS port; built-in or internal modem is alternate value)	COM1 , COM2
Printer Port Bi-directional (allows input to parallel LPT1: port)	Disable , Enable
Low Battery Speaker Alarm (enables audible low battery alarm)	Disable, Enable
System Speaker (enables the internal system speaker)	Disable, Enable
Built-in Expanded Memory Port Address (sets the port address for expanded memory)	208H, 218H, 258H , 268H, 2A8H, 2B8H, 2E8H, Disable
Hard Ram Size (sets amount of memory configured as Hard RAM)	0 KB , 128KB, 192KB, 256KB, 320KB, 384KB

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